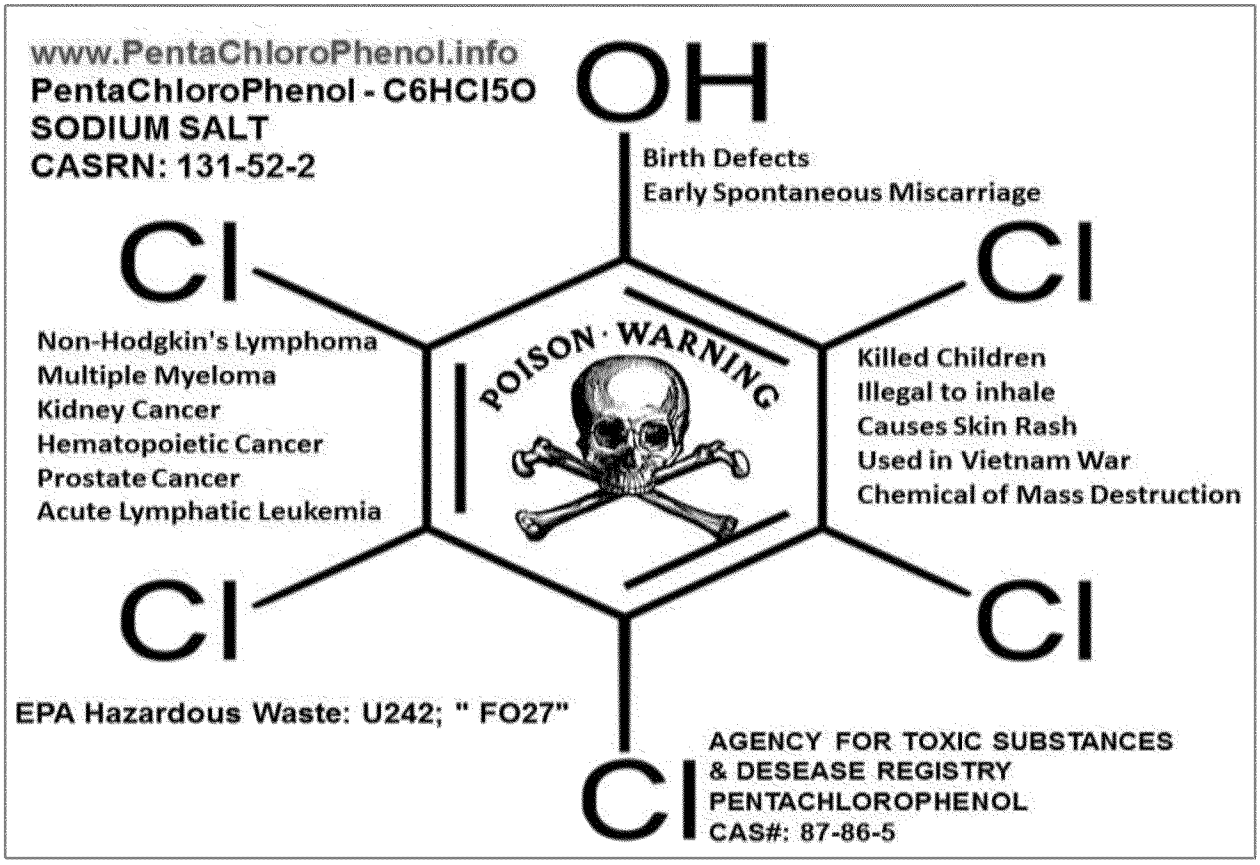
PentaChloroPhenol (PCP)

Penta – Chloro - Phenol



www.PentaChloroPhenol.info

https://www.epa.gov/pesticide-reevaluation
http://www3.epa.gov/airtoxics/hlthef/pentachl.html
http://nepis.epa.gov/Simple.html
https://en.m.wikipedia.org/wiki/Pentachlorophenol

Dear Reader;

The following document is a complication of material about the toxic chemical PentaChloroPhenol. Short snippets about the material with a link to the content have been provided.

The purpose of the document is to consolidate in one easy to read format.

A copy of the document has been provided to the EPA to take under advisement in regards to their current review to consider re -registering PentaChloroPhenol.

The document is marked and supporting videos found at:

http://www.PentaChloroPhenol.info

The document will be updated periodically as new superfund sites , water well breaches, spills and illness are located and reported.

Questions may be referred to me Chuck Idol.

Thank you
Sincerely
Chuck Idol

PLEASE FEEL FREE TO

SHARE THE DOCUMENT!!

BASIC INFORMATION:

EPA-HQ-2018-000065-0001808

According to "Wood Pole Purchasing, Inspection, and Maintenance 69 percent of poles in service are southern pine, followed by Douglas-fir (15 percent) and western red cedar (13 percent).

The most prevalent wood pres ervative for poles in service is pentachlorophenol (Penta). Approximately 63 percent of poles are treated with this preservative.

According to industry experts, some 16.5 million pounds of technical Penta are used annually, each year resulting in the Pent a treatment of an estimated 2 million wood utility poles. Estimates a total of 4.2 million poles treated annually with all preservatives.

Wood treaters purchase Penta in block form and dissolve it in cosolvent or whole P9 oil -as defined by the American Woo d Protection Association (AWPA) -or purchase it as a 40 percent concentrate and mix it with blending oil (typically #2 fuel oil - petroleum diesel).

Penta recently underwent an extensive data review process, resulting in its re-registration by the US Environmental Protection Agency.

AWPA standards have also been modified to allow the use of *biodiesel-hydrocarbon blends as a carrier solvent,* .....

Recent studies have shown that *Penta dissolved in biodiesel -based systems* *<u>might not</u>* *be as effective as* *petroleum-based carrier systems.* Reports from laboratory tests and limited field testing on a proprietary biodiesel containing *P9 oil indicate the biodiesel may not effect efficacy*, but long-term data is not yet available.

Penta is a restricted use pesticide. The only major company manufacturing and selling Penta as a wood preservative in the US is KMG-Bernuth Inc.

http://www.utilityproducts.com/articles/print/volume-16/issue-06/product-focus/line-construction-maintenance/wood-utility-poles-and-preservative-choices.html

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To: Whom It May Concern

Information about the chemical called PentaChloroPhenol the chemical used to treat wooden utility poles you will see leaching off the poles and near your ground water.

Pentachlorophenol (penta or PCP) was first introduced for use as a wood preservative in 1936 by Dow Chemical Company and Monsanto Chemical Company. Penta has since been used as an herbicide on ornamental lawns, golf courses, aquatic areas, and rights-of-way; for control of subterranean te rmites; as an anti-microbial agent in cooling towers, adhesives, latex paints, paper coatings, cements used with food can ends and seals, coatings in reusable bulk food storage containers, photographic solutions, leather tanneries, and pulp and paper mills; and, as a disinfectant.

PentaChloroPhenol is marketed under the trade names Santophen, Penchlorol, Chlorophen, Pentacon, Penwar, Sinituho and Penta among others.

As of 1977, about **50 million pounds of penta were produced annually in the United States**. In 1985, 35 million pounds of penta were manufactured in the U.S. Vulcan Chemicals, located in Wichita, Kansas, is penta's sole U.S. producer.

In 1988, the U.S. Environmental Protection Agency (EPA) cancelled all uses of penta except for its use as a wood preservative.

Teratogenicity:

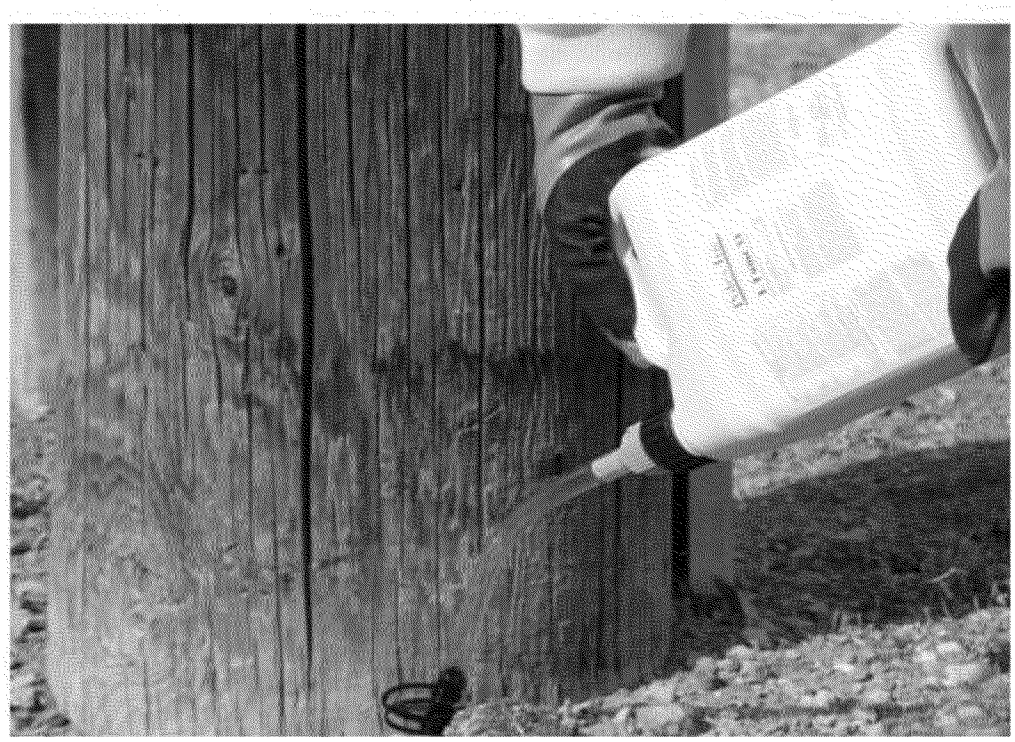
EPA has concluded that penta and possibly its hexachlorodibenzo - p-dioxin (HxCDD) contaminants cause birth defects and fetotoxic effects in test animals.32 Reported adverse effects in fetuses from penta exposure include distorted sex ratios, increased incidences of resorbed embryos, skeletal anomalies, subcutaneous edema (excessive fluid), reduced survival, and reduced growth.7,29 Reported no observable effect levels (NOELs) for teratogenicity range from 3 to 5.8 milligrams per kilogram (mg/ kg) per day for penta and .001 mg/kg per day for HxCDD.4,29,33

Pentachlorophenol has been one of the most heavily used pesticides in the United States. The compound is found in all environmental media (air, soil, and water) as a result of its past widespread use. In addition, a number of other chemicals, including **hexachlorobenzene**, **pentachlorobenzene**, and **benzene hexachloride isomers, are known to be metabolized to pentachlorophenol. Pentachlorophenol has been identified in at least 313 of the 1,585 hazardous waste sites that have been proposed for inclusion on the EPA National Priorities List (NPL) (HazDat 2001). However, the number of sites evaluated for pentachlorophenol is not known** . (ATDSR = tp51-c6)

With so much focus being giv en on Climate Change and the need for more electricity and Internet connectivity comes the demand for more wooden utility poles across the United States Of America.

Wooden poles are treated with a deadly chemical PentaChloroPhenol (PCP) a carcinogen. It is also treated with P9 crude oil all in the effort to try and keep the wood from degrading over a 40 /60 -year period. During that time, the wood must be retreated by pouting chemicals at the base and injecting m ore chemicals into the wood to keep it from being eaten by bugs or destroyed by woodpeckers and more.

The PentaChloroPhenol will leech gallons into the ground and the retreatment is measure and managed in “gallons” per pole. Look around your community and calculate the amount of chemicals needed t o keep one pole from rotting after being cut and stripped.



One pole and its leeching can cause cancer and death to anything it comes in contact with given its low absorption and daily limit intake threshold.

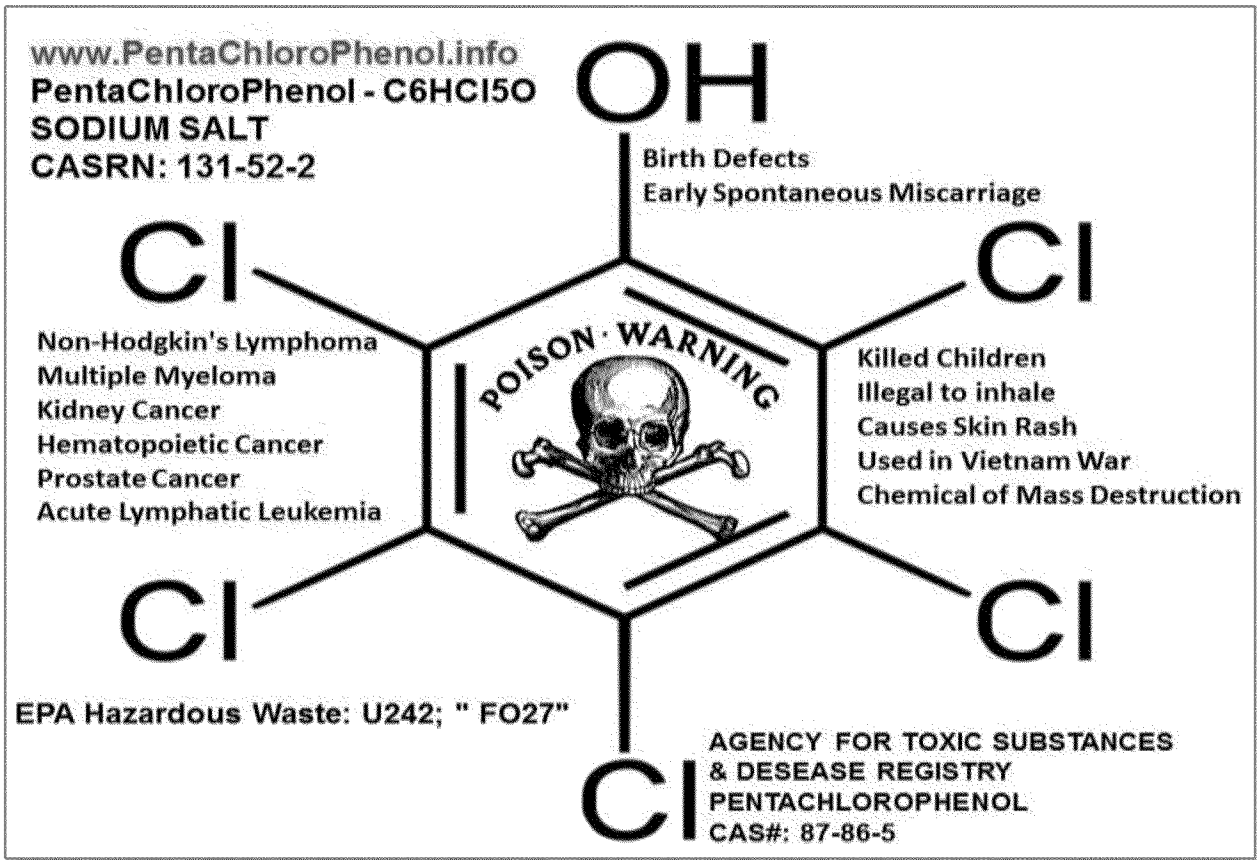
2) ONE EXAMPLE - INDIAN POSIONING

http://www.therepublic.com/view/local_story/Editorial-Contamination-remedy_1443742927

"When REMC customer David Carothers noticed a **strange odor coming** from the well **that provides drinking water** for his home on Lowell Road, he reached out to the utility for help. He also reported to the utility that **26 fish in a pond fed by the well water had died.** The only recent change he was aware of was installation of new power lines and poles by REMC near his home. When he investigated the poles, he found that one — located about 52 feet from the well — had the same odor as the well water. REMC came to Carothers' home and tested the water for chemicals. The results showed 13 che micals in the well water, including **pentachlorophenol,** a substance used to treat utility poles. **The utility company acknowledged that the pole was the likely culprit of contamination.."**

This document (which is being updated frequently) is meant to bring the issues related to chemical poles and to help explain there are non-chemical solutions to wood poles such as Steel and Fiber Reinforced Polymer Poles bury the lines http://www.NoMorePoles.com.

The EPA is well a ware of the issues but has to date not banned or even released an interim restriction for this lethal chemical even when the rest of the world has taken action and banned it globally.



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www.PentaChloroPhenol.info and the documents can be found under:

www.PentaChloroPhenol.info/DocShare and:

PentaChloroPhenol has been banned other than the United States.

There are alternatives to 18 th century wooden poles. Many Utility Companies are using 20th century solutions such as Steel and FRP – Fiber Reinforced Polymer Poles that do not leech and come with a warrantee.

PentaChloroPhenol will only last an average of 10 years then you will find your town facing yet another chemical that is used to maintain the poles by dr illing and pouring gallons of chemicals into the wood to try and save it. Aka “Pole Maintenance”

WOOD POLE MAINTENANCE

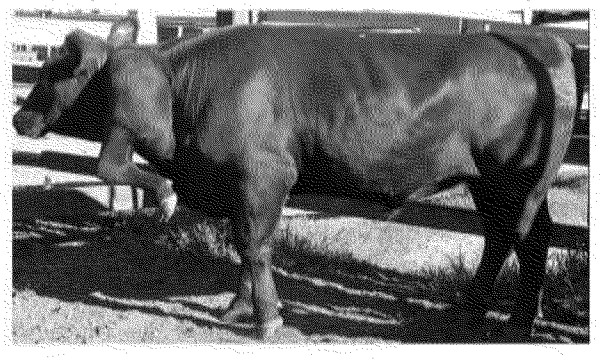
Pole Maintenance can save you money by reducing unnecessary replacement costs and by adding many additional years of durable service life to your pole plant. Osmose programs allow the pole owner to better manage the critical factors that determine pole performance-strength, load and cost.

There have been numerous issues related to the smell of the PentaChloroPhenol and the P9 Crude Oil that will leech down the pole and onto the ground and possibly into the ground water. Homeowners are complaining it is affecting their property use and property value. We even have laws against breathing the fumes as follows:

The Law

N.Y. PBH. LAW § 3380 : NY Code - Section 3380: Inhalation of certain toxic vapors or fumes, and certain hazardous inhalants ; sale of glue and hazardous inhalants in certain cas es 1. (a) As used in this section the phrase "glue containing a solvent having the property of releasing toxic vapors or fumes" shall mean and include any glue, cement, or other adhesive containing one or more of the following chemical compounds: acetone, cellulose acetate, benzene, butyl alcohol, ethyl alcohol, ethylene dichloride, ethylene trichloride, isopropyl alcohol, methyl alcohol, methyl ethyl ketone, pentachlorophenol, petroleum ether, toluene or such other similar material as the commissioner shall by regulation prescribe.

3) PENTACHLOROPHENOL TERATOGENIC EFFECTS



PentaChloroPhenol Teratogenic effects "studies, especially those of Schwetz et al. (1974) and Welsh et al. (1987), **showed toxic effects of pentachlorophenol in offspring that occurred at dose levels below those producing maternal toxicity**. In addition, it is recognized that the contaminants hexachlorodioxin and 2,3,7,8 tetrachlorodioxin are considered teratogenic chemicals. Due to this reason combined with the knowledge that hexachlorodioxin is a contaminant of pentachlorophenol, the warning labels on pentachlorophenol formulations with respect to potential teratogenic effects have remained."

www.PentaChloroPhenol.org

4) PENTACHLOROPHENOL CHILDREN BREATHING PESTICIDES

"Because of their higher rate of breathing, children are more highly exposed to pesticides that remain in indoor air. Compared to their parents, children living in homes with indoor air contaminated with the pesticide **pentachlorophenol (PCP)** , were found to have close to twice as much PCP in their blood as their parents. Children also spend a lot of time closer to the ground than adults thus they are more likely to come into contact with pesticides that concentrate in this breathing zone. Children also have greater hand-to-mouth activity, increasing opportunities for direct ingestion of pesticide residues in dirt or dust."

www.PentaChloroPhenol.org

5) PENTACHLOROPHENOL AND P9 CRUDE OIL LEACHING.

6) PENTACHLOROPHENOL AGENT ORANGE – AGENT BLUE

Agent Orange / Agent Blue :

chlorophenoxy or chlorophenols acid herbicides

Dioxins are also generated in such as chlorine bleaching fibers for chlorinated phenols, Compounds involved include the wood preservative pentachlorophenol, and also herbicides such as 2,4-dichlorophenoxyacetic acid (or 2,4-D) and 2,4,5-trichlorophenoxyacetic acid (2,4,5-T). Higher levels of chlorination require higher reaction temperatures and greater dioxin production. Dioxins may also be formed during the photochemical breakdown of the common antimicrobial compound triclosan.[17]

www.PentaChloroPhenol.org

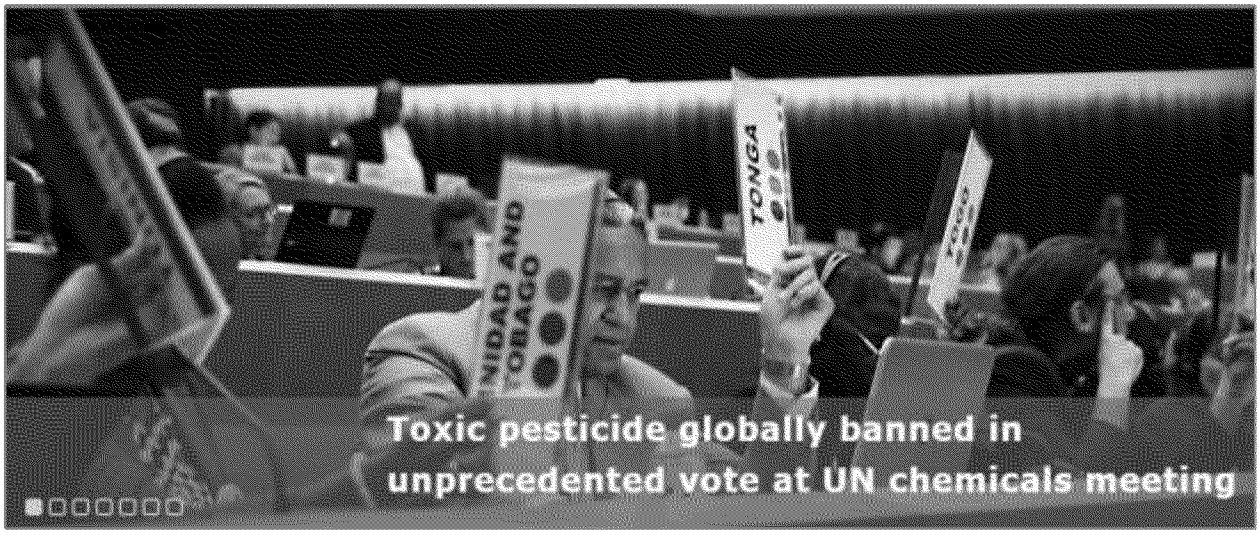
7) BURY THE LINES - HTTP://NOMOREPOLES.COM

Strong Town Leaders are looking to bury lines to ensure their towns remain healthy and look like a place their residents and children can grow and work.

THIS IS NOT NESSESSARY ONLY A CHEAP TEMPORAY SOLUTION

8) THE WORLD BANS PENTACHLOROPHENOL

Announcement to Ban PentaChloroPhenol Click Here



(Geneva, Switzerland) – Delegates from more than 90 countries took the unprecedented step of voting for a global ban on pentachlorophenol – a proven toxic pesticide and contaminant found in wildlife and human biomonitoring studies worldwide. The historic vote came at the combined meetings of the Basel, Rotterdam, and Stockholm Conventions – which usually make decisions by consensus – after India repeatedly blocked action.

During the meeting, India surprisingly rejected the findings of the Stockholm Convention's own scientific expert committee in which they participated. Switzerland triggered the voting procedure – the first in the history of the convention. Ninety-four countries voted in favor of global prohibition of pentachlorophenol; two opposed; and eight countries abstained.

"We commend the global community for this important decision which will help ensure that the Indigenous Peoples of the Arctic and the traditional foods on which they depend are protected against toxic pentachlorophenol." said Pamela Miller ofAlaska Community Action on Toxics. The delegates of the Stockholm Convention also supported international bans on two other industrial chemicals that harm the global environment and human health: chlorinated naphthalenes and hexachlorobutadiene.

Delegates at the Rotterdam Convention failed to list two deadly substances, chrysotile asbestos and a paraquat formulation, despite the fact that exporters would simply have been required to notify and get permission from importing countries. Belarus, Cuba, India, Kazakhstan, Kyrgyzstan, Pakistan, and Russia all opposed listing chrysotile asbestos. Guatemala, India, Indonesia, and Paraguay blocked listing of the paraquat formulation.

"All the candidate substances meet the Convention criteria according to the treaty's own expert committee," said Mariann Lloyd-Smith, IPEN Sr. Policy Advisor. "That means that a small handful of opposing countries and their powerful industry representatives undermined the treaty with a political decision that disrespects governments' right to know what substances are

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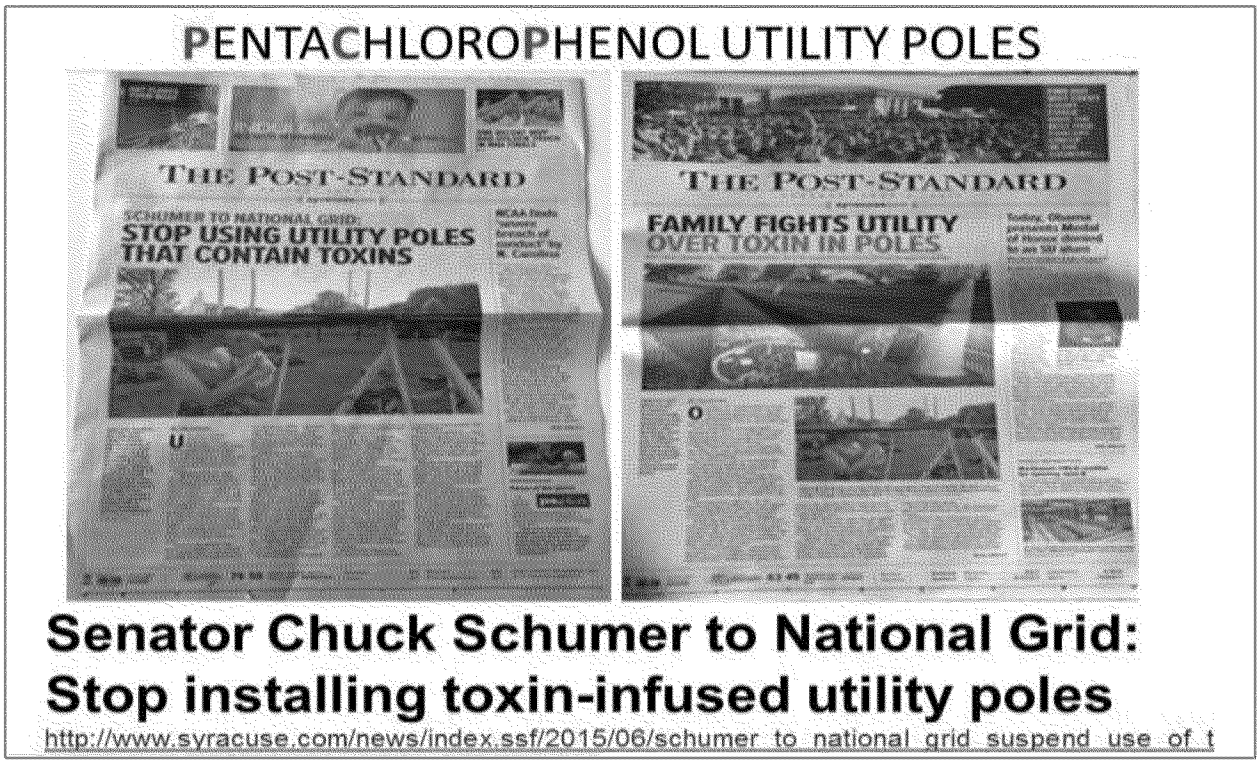
9) ONE MOTHERS STORY

One Mothers Story – CLICK HERE



10) PENTACHLOROPHENOL IMPACT ON BIRDS

BIRDS

Signs of PCP intoxication in birds include excessive drinking and regurgitation, rapid breathing, wing shivers or twitching, jerkiness, shakiness, ataxia, tremors, and spasms (Hudson et al. 1984). Signs sometimes appear within 10 minutes. Mallards usually die 2 to 24 hours posttreatment, and ring-necked pheasants 3 to 5 days posttreatment; remission in pheasants requires up to 2 weeks (Hudson et al. 1984).

Pentachlorophenol killed various species of birds at single oral doses of 380 to 504 mg/kg BW, at dietary concentrations of 3,850 mg/kg ration fed over a 5-day period, and when nesting materials contained >285 mg/kg. Residues (mg/kg fresh weight tissue) in birds found dead from PCP poisoning were 11 in brain, 20 in kidney, 46 in liver, and 50 to 100 in egg (Table 5). Sublethal effects, including liver histopathology and diarrhea, were reported in domestic chickens at dietary levels as low as 1 mg PCP/kg feed over an 8-week period; significant accumulations in tissues were measured after consumption for 14 days of diets containing 10 mg PCP/kg (Table 5). Residues in chickens fed PCP-containing diets for 8 weeks were dose-related and highest in kidney

11) "I NEVER DREAMED PENTA WAS AS DANGEROUS UNTIL I LOST MY SON."

http://www.wbrc.com/story/28944736/toxic-trouble-does-contamination-remain-in-the-soil-and-water

FLOWOOD, MS (Mississippi News Now) - Few people realize that 6 acres in Flowood remain on the EPA's Superfund list. Why? Chemical waste left behind in the soil and water that the EPA concluded may be linked to adverse health impacts.

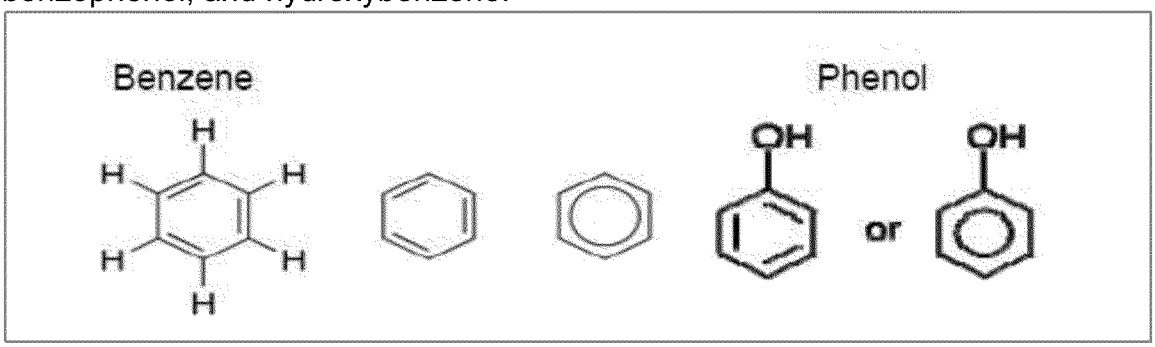
READ THE ARTCLE ON THE WEB SITE.

12) BREAST CANCER AND PENTACHLOROPHENOL

There were seven phenols followed and reported in selected participants. Four environmental phenols, Bisphenol A, 2 -Hydroxy-4-methoxybenzophenone (Benzophenone-3), 4-tert-Octyl phenol and 2,4,4' -Trichloro-2'-hydroxyphenyl ether (Triclosan), and three organchlorine pesticides, **Pentachlorophenol**, 2,4,5 - Trichlorophenol, 2,4,6-Trichlorophenol.

Phenols or phenolics are a manufactured class of weakly acidic water-soluble chemical compounds related to the organic chemical compound phenol naturally present in most foods. Phenol is used as a slimicide, a disinfectant, in medical products, and as a reagent in research laboratories and as a precursor or intermediate during the manufacture of phen olic resins, bisphenol A, caprolactam, adipic acid, alkylphenols, aniline, and **chlorinated phenols** . Phenols are readily absorbed following inhalation, ingestion or skin contact, and are widely distributed in the body, can cross the placenta, and have been found in human breast milk. Some phenols are weak endocrine disrupters.

Phenol chemical formula is C6H5OH and its structure is that of a hydroxyl group (-OH) bonded to a phenyl ring (Fig. 1). Synonyms for phenol include carbolic acid, benzophenol, and hydroxybenzene.



13) PENTACHLOROPHENOL (PCP) IN TOYS

http://anchorcertanalytical.com/testing-services/pentachlorophenol

Pentachlorophenol is a synthetic substance that was first produced in the 1930's. It can be found in two forms – PCP itself or as the sodium salt of PCP, which dissolves easily in water.

Pentachlorophenol (PCP) can be found in several product types and is used to prevent fungal growth and decay by the spread of bacteria. In textile and leather industry, PCP is mostly used for preservation finishing; in ligneous products PCP can be used in conservation paints. PCP can also be used in wooden toys and handicrafts.

Concern

PCP and its salts are highly toxic for aquatic systems and highly persistent in the environment. PCP is also harmful to human health (short term exposure to large amounts of PCP can cause harmful effects on the liver, kidneys, blood, lungs, nervous system, immune system and gastrointestinal tract) and contact with PCP can irritate the skin, eyes and mouth. Products containing PCP may form highly toxic substances when they are incinerated. PCP is also a suspected/probable carcinogen.

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14) PENTACHLOROPHENOL – (WWW.FS.FED.US)

http://www.fs.fed.us/t-d/pubs/htmlpubs/htm06772809/page14.htm

Consumer Information

This wood has been preserved by pressure-treatment with an EPA-registered pesticide containing pentachlorophenol to protect it from insect attack and decay. Wood treated with pentachlorophenol should be used only where such protection is important. Pentachlorophenol penetrates deeply into and remains in the pressure-treated wood for a long time. Exposure to pentachlorophenol may present certain hazards. Therefore, the following precautions should be taken both when handling the treated wood and in determining where to use and dispose of the treated wood.

Use Site Precautions

- Logs treated with pentachlorophenol should not be used for log homes.
- Wood treated with pentachlorophenol should not be used where it will be in frequent or prolonged contact with bare skin (for example, chairs and other outdoor furniture), unless an effective sealer has been applied.
- Pentachlorophenol-treated wood should not be used in residential, industrial, or commercial interiors except for laminated beams or building components that are in ground contact and are subject to decay or insect infestation and where two coats of an appropriate sealer are applied. Sealers may be applied at the installation site. Urethane, shellac, latex epoxy enamel, and varnish are acceptable sealers for pentachlorophenol-treated wood.
- Wood treated with pentachlorophenol should not be used in the interiors of farm buildings where there may be direct contact with domestic animals or livestock that may crib (bite) or lick the wood.
- In interiors of farm buildings where domestic animals or livestock are unlikely to crib (bite) or lick the wood, pentachlorophenol-treated wood may be used for building components which are in ground contact and are subject to decay or insect infestation and where two coats of an appropriate sealer are applied. Sealers may be applied at the installation site.
- Do not use pentachlorophenol-treated wood for farrowing or brooding facilities.
- Do not use treated wood under circumstances where the preservative may become a component of food or animal feed. Examples of such sites would be structures or containers for storing silage or food.
- Do not use treated wood for cutting boards or countertops.

EPA-HQ-2018-000065-0001826

- Only treated wood that is visibly clean and free of surface residue should be used for patios, decks, and walkways.

- Do not use treated wood for construction of those portions of beehives that may come into contact with the honey.

- Pentachlorophenol-treated wood should not be used where it may come into direct or indirect contact with public drinking water, except for uses involving incidental contact such as docks and bridges.

- Do not use pentachlorophenol-treated wood where it may come into direct or indirect contact with drinking water for domestic animals or livestock, except for uses involving incidental contact such as docks and bridges.

Handling Precautions

- Treated wood should not be burned in open fires or in stoves, fireplaces, or residential boilers because toxic chemicals may be produced as part of the smoke and ashes. Treated wood from commercial or industrial use (e.g., construction sites) may be burned only in commercial or industrial incinerators or boilers rated at 20 million British Thermal Units/hour or greater heat input or its equivalent in accordance with State and Federal regulations.

- Avoid frequent or prolonged inhalation of sawdust from treated wood. When sawing and machining treated wood, wear a dust mask. Whenever possible, these operations should be performed outdoors to avoid indoor accumulations of airborne sawdust from treated wood.

- When power-sawing and machining, wear goggles to protect eyes from flying particles.

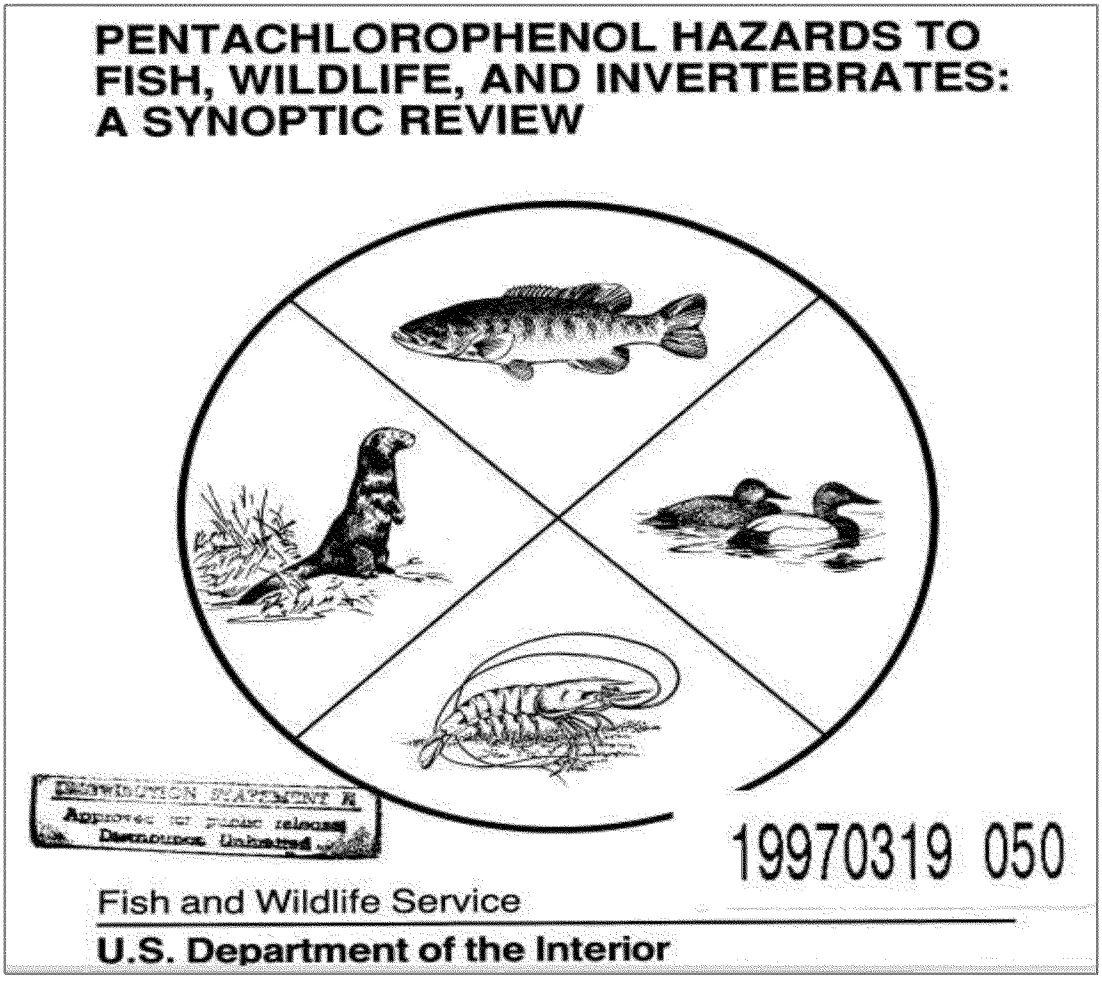
- Avoid frequent or prolonged skin contact with pentachlorophenol-treated wood.

- When handling the treated wood, wear long-sleeved shirts and long pants and use gloves impervious to the chemicals (for example, gloves that are vinyl-coated).

- After working with the wood, and before eating, drinking, and using tobacco products, wash exposed areas thoroughly.

- If oily preservatives or sawdust accumulates on clothes, launder before reuse. Wash work clothes separately from other household clothing.

15) PENTACHLOROPHENOL IMPACT ON WILD LIFE



http://www.dtic.mil/dtic/tr/fulltext/u2/a322630.pdf

16) PARK VISON PLAN CALLS FOR NO PENTACHLOROPHENOL

2015 SNOHOMISH COUNTY PARKS AND RECREATION VISIONING PLAN

*** CALLS FOR BAN ON PENTACHLOROPHRNOL ***

http://snohomishcountywa.gov/DocumentCenter/View/28315

Yes, I would please urge the parks to not use ANY pesticides or chemicals herbicides in the parks, this includes Round-up (glyphosate)... For further info see the numerous articles on it http://www.panna.org/search/node/Glyphosate, this article http://www.i-sis.org.uk/EU_Regulators_Monsanto_Glyphosate_Toxicity.php and

http://www.beyondpesticides.org/gateway/pesticide/glyphosate.htm. Also, please do not use extremely toxic chemicals to treat fences or other woods in the park, such as **Pentachlorophenol ("Penta") - see**

http://www.beyondpesticides.org/gateway/pesticide/penta.htm, a good one to read is this http://www.beyondpesticides.org/wood/pubs/poisonpoles/findings.html This toxins get into our water supply, birds, insects and entire eco-system. Please help make our State and its parks safe for all living creatures and especially our children, whose growing bodies and immune system are most susceptible to harm by this toxic chemicals.

https://www.beyondpesticides.org/assets/media/documents/infoservices/pesticidesandyou/Fall%2001/Poison%20Playgrounds.pdf

https://www.beyondpesticides.org/assets/media/documents/infoservices/pesticidesandyou/documents/UtilityPolesFall2014.pdf

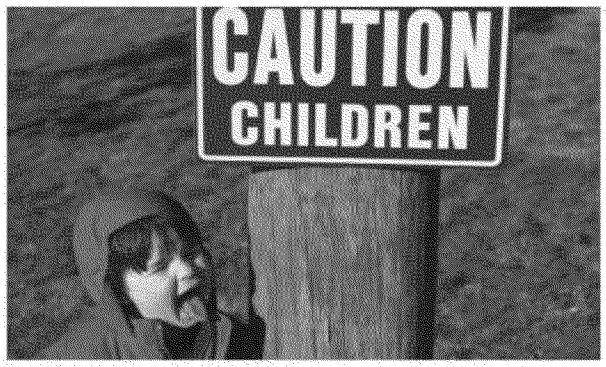
http://www.beyondpesticides.org/assets/media/documents/infoservices/pesticidesandyou/Spring%202008/wood.pdf

Have You Ever Seen Someone Near a Utility Pole? EPA Hasn't!

Send a picture and help EPA see the reality of wood preservative exposure in your community.

Children playing around utility poles treated with chemicals like pentachlorophenol with contaminants including dioxin, furans and hexachlorobenzene. People, pets and wildlife exposed daily. The pictures speak for themselves and they reflect the reality that people know.

Yet, in documents EPA released on April 17, 2008 the agency says people don't come into contact with utility poles or these chemicals, known by EPA to cause cancer, kidney and liver disease and reproductive effects.



The undoctored stock photos on this page illustrate how common exposure to utility poles, both in use and recycled, is in everday life.

17) PENTACHLOROPHENOL TOXICOLOGY ENVIRONMENTAL FATE

FULL ARTCLE CLICK HERE

As of 1977, about 50 million pounds of penta were produced annually in the United States.2 In 1985, 35 million pounds of penta were manufactured in the U.S.4 Vulcan Chemicals, located in Wichita, Kansas, is penta's sole U.S. producer.5 In 1988, the U.S. Environmental Protection Agency (EPA) cancelled all uses of penta except for its use as a wood preservative

"EPA has concluded that penta and possibly its hexachlorodibenzop -

dioxin (HxCDD) contaminants cause birth defects and fetotoxic effects in test animals."

Pentachlorophenol: Toxicology and Environmental Fate

By Brett Fisher

Pentachlorophenol (penta or PCP) was first introduced for use as a wood preservative in 1936 by Dow Chemical Company and Monsanto Chemical Company.[1] Penta has since been used as an herbicide on ornamental lawns, golf courses, aquatic areas, and rights-of-way; for control of subterranean termites; as an anti-microbial agent in cooling towers, adhesives, latex paints, paper coatings, cements used with food can ends and seals, coatings in reusable bulk food storage containers, photographic solutions, leather tanneries, and pulp and paper mills; and, as a disinfectant.[2] It is marketed under the trade names Santophen, Penchlorol, Chlorophen, Pentacon, Penwar, Sinituho and Penta among others.[3]

As of 1977, about 50 million pounds of penta were produced annually in the United States.[2] In 1985, 35 million pounds of penta were manufactured in the U.S.[4] Vulcan Chemicals, located in Wichita, Kansas, is penta's sole U.S. producer.[5] In 1988, the U.S. Environmental Protection Agency (EPA) cancelled all uses of penta except for its use as a wood preservative.[6]

There are two manufacturing processes used to produce penta: (1) the

however, is incomplete. Technical grade penta contains from 4 to 12 percent tetrachlorophenols, which are toxic in their own right. In addition, the high temperatures used in manufacturing penta produce several contaminants including hexachlorobenzene, dioxins, and furans (see Figure 1).[2]

There are two general methods for preserving wood, the pressure process and the non-pressure process. The pressure-treating process involves placing the wood in a pressure-treating vessel where it is immersed in the preservative and then subjected to applied pressure. The excess penta is vacuumed from the vessel and the treated wood is removed, inspected, stored, and shipped. In the non-pressure process, penta is applied to the surface of wood by spraying, brushing, dipping, and soaking. This process is used for short-term wood protection in construction where the wood will be protected from exposure to soil or weather through brick or cement barriers. This process is also used to control sapstain fungi (fungi which leave a blue stain on wood) by passing green lumber through a spray tunnel or by dipping the wood.[7]

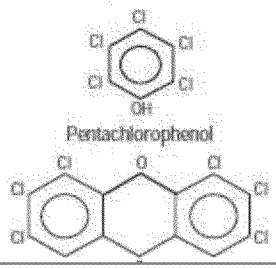
Human Exposure

People are exposed to penta in the

etrated the skin than had been estimated by EPA: 62 percent of the penta in oil was absorbed and 16 percent of the penta in water.[13] Two recent studies of sawmill workers exposed to water-based penta support these findings.[10,14] These findings suggest that workers and others, such as those living in treated homes or children who play on treated playground structures, may be at greater risk from exposure through skin contact than estimated by EPA.

Although most people are not occupationally exposed to penta, researchers for the national Health and Nutritional Examination Survey II of the National Center for Health Statistics found

Figure 1
Pentachlorophenol and Some of Its Contaminants



18) MORTALITY IN COHORT PENTACHLOROPHENOL

AMERICAN JOURNAL OF INDUSTRIAL MEDICINE 30:180–194 (1996)

Mortality in a Cohort of Pentachlorophenol Manufacturing Workers, 1940–1989

Jonathan M. Ramlow, PhD, MPH, **Nanette W. Spadacene,** CIH, MPH, **Scott R. Hoag,** IHIT, MS, **Beth A. Stafford,** BS, **Janice B. Cartmill,** BS, RN, **and Phillip J. Lerner,** MD, MPH

Mortality in a cohort of 770 workers with potential pentachlorophenol (PCP) exposure was evaluated from 1940 through 1989. The study cohort is a subset of a larger cohort of workers with potential exposure to higher chlorinated dioxins. Total mortality and cancer mortality in the PCP cohort were slightly lower than expected in comparison to the U.S. white male population. There were 229 total deaths with 242.5 expected (SMR = 94, 95% confidence interval 83–108), and 50 cancer deaths with 52.6 expected (SMR = 95, 95% confidence

19) PENTACHLOROPHENOL DATA SHEET

KMG

SAFETY DATA SHEET

1. Identification

Product identifier **Dura-Treat 40 Wood Preserver**

http://kmgchemicals.com/wp-content/uploads/Dura-Treat-40-Wood-Preserver-Safety-Data-Sheet.pdf

20) PROP- 65 PENTACHLOROPHENOL - "KNOWN TO CAUSE CANCER"

http://oehha.ca.gov/prop65/CRNR_notices/admin_listing/intent_to_list/NOIL103015pentachlrophenol.html

Proposition 65

NOTICE OF INTENT TO LIST PENTACHLOROPHENOL AND BY-PRODUCTS OF ITS SYNTHESIS (COMPLEX MIXTURE) [10/30/15]

The California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA) intends to list "pentachlorophenol and by-products of its synthesis (complex mixture)" as known to the state to cause cancer under the Safe Drinking Water and Toxic Enforcement Act of 1986[1]. This action is being proposed under the authoritative bodies listing mechanism[2].

Pentachlorophenol is currently listed as **known to the state to cause cancer** under Proposition 65.

This listing includes the byproducts of pentachlorophenol synthesis, which are found in varying amounts in pentachlorophenol and the sodium salt formulations.

21) ALASKA COMMUNITY ACTION ON TOXICS

http://www.watershedsentinel.ca/content/eliminate-toxic-chemicals

Eliminate Toxic Chemicals

Source:

Alaska Community Action on Toxics

ANCHORAGE, AK, USA; TORONTO, ON, CANADA; TEX COCO, STATE OF MEXICO, MEXICO: Today, health, human rights, environmental justice, and conservation organizations across North America are calling on the governments of Mexico, Canada, and the United States (US) to join them in opposition to the continued use of pentachlorophenol (PCP). Coalitions in each of the three countries are sending letters in advance of the Conference of the Parties (COP7) of the Stockholm Convention on Persistent Organic Pollutants (POPs) in May 2015 demanding support for a global ban on PCP, as well as two additional substances recommended for global elimination by a UN expert committee (aka POPs Review Committee).

PCP has been used throughout the world as an insecticide, fungicide, and defoliant. currently, it is used primarily as a wood preservative pesticide for utility poles, with the majority of use in the U.S. and Canada. Due to its high toxicity and persistence in the environment, PCP has already been banned in many countries.

"Pentachlorophenol has global health implications since it is found in the bodies of people throughout the world including Indigenous Peoples of the Arctic . Now governments must agree to finally eliminate this toxic chemical," said Pamela Miller, Executive Director of Alaska Community Action on Toxics.

EPA-HQ-2018-000065-0001832

People are exposed through inhalation and ingestion of the chemical, skin contact, and contaminated ground water. PCP is a persistent toxic chemical found in the breast milk, blood, amniotic fluid, adipose tissue, and seminal fluid of people throughout the world. The chemical is associated with adverse health effects including damage to the developing brain and nervous system, impairment of memory and learning, disruption to thyroid function, immune suppression, infertility, and increased risk of certain c ancers such as non-Hodgkin lymphoma.

"As a coalition of NGOs and academics from throughout Mexico, we are calling on the Mexican government to support a global ban on PCP without exemptions, and demanding a thorough investigation of the environmental and h ealth impacts at the maquiladora manufacturing facility that produces PCP for wood preservation and the only manufacturer of wood -preserving PCP in North America, according to the producer," states Fernando Bejarano with Red de Acción en Plaguicidas y Alte rnativas en México (RAPAM) and IPEN hub for Latin America and the Caribbean.

"We are urging the Canadian government to align itself with other countries around the world that have stopped using PCP. The POPs Review Committee has been tremendously thorough in its work and has demonstrated that safe alternatives to PCP exist that will allow present users to move away from PCP," states Fe de Leon, Researcher with the Canadian Environmental Law Association. "Canada's support for global elimination for the three new toxic substances is essential to continue the efforts for reducing POPs levels in Canada and around the world."

Children may be exposed to this carcinogenic substance while they are playing in and around PCP -treated poles in residential areas and near schools and parks. Recent studies have confirmed that children in the U.S. are still being exposed to pentachlorophenol, even though PCP was banned for almost all uses in 1987 except for wood preservation of utility poles. PCP -treated poles are being re -used in landscaping, livestock enclosures, and gardening applications that can result in continued exposures. Occupational exposure to PCP is a concern in the manufacturing and application process.

"Pentachlorophenol (PCP) is almost entirely used in Canada and US on utility poles. Non-chemical alternatives for these uses are readily available, require less maintenance, have a longer service life and have already been implemented in both U.S. and Canada. In Canada PCP has been almost completely phased out. T herefore, there is no reason for continued use of this highly toxic substance. IPEN strongly recommends listing PCP in Annex A of the Stockholm convention with no specific exemptions," stated Dr. Olga Speranskaya, Co -Chair of IPEN, an international network of 700 participating organizations working for a toxics-free future.

EPA-HQ-2018-000065-0001833

Next month, the international community of 179 nations that have ratified the Convention is meeting in Geneva, Switzerland to discuss a global ban of PCP. Mexico and Canada are Parties to the Convention. The United States has not ratified and is not a Party to Convention but can play an instrumental role protecting the health of the global community by supporting a ban on PCP. The UN expert committee of the Stockholm Convention recommend ed the global elimination of pentachlorophenol in October 2014. In its recommendation for the Stockholm Convention, the Committee cited pentachlorophenol's persistence, bioaccumulation, long -range transport, and its toxic impacts. The Committee found wide availability of non -chemical alternatives that were much safer than pentachlorophenol. The committee also recommends the global elimination of two additional substances, hexachlorobutadiene, produced as a byproduct in the manufacture of chlorinated solvent s; and chlorinated naphthalenes, unintentionally produced through such processes as waste incineration, metals smelting, and cement production. Governments around the world will decide on the recommendations for global elimination of these three toxic subs tances in May 2015, but Parties to the Stockholm Convention on POPs typically accept the recommendations of its expert committee.

22) PENTACHLOROPHENOL – DEATH

Death has been reported within 10 minutes of ingestion of 4.8 g phenol. Other cases have been reported in which death has occurred within hours after ingestion of 10–20 g phenol.

Iranian Journal of Toxicology Volume 8, No 27, Winter 2015

Phenol and Its Toxicity: A Case Report

Mahesh Chand Meena[*1], *Rahul Band* [1], *Girish Sharma*[1]

Received: 15.08.2014 *Accepted: 28.09.2014*

ABSTRACT

Background: Phenol and its derivatives like dinitrophenol and pentachlorophenol (carbolic acid) are widely used as insecticides, but they are very toxic substances. Phenol is a general protoplasmic poison with corrosive local effects that denature proteins. Poisoning with phenol compounds may occur by ingestion, inhalation, and absorption through skin. In this report we presented the toxicity effects of Phenol and its derivatives like dinitrophenol and pentachlorophenol on humans.

Case report: A 27-year-old married female was found unconscious at her residence in September 2013. She was expired after hospitalization in Lady Hardinge Medical College and its associated hospital on the same day after six hours. On examination, corrosion of skin, at angel of mouth and chin, and brown discoloration in mucosa of the esophagus were seen. Histological examination showed exfoliation of esophageal mucosa and coagulative necrosis of gastric mucosa. In toxicological analyses, carbolic acid was detected.

Conclusion: Strict precautionary measures are advised when using this compound.

Keywords: Corrosion, Phenol, Toxicity.

23) NIEHS SUPERFUND RESEARCH - CHILDREN

The NIEHS Superfund Research Program (SRP)

SRP enables university-based scientists, engineers, and public health workers, along with community members, to lessen the environmental health effects of hazardous waste sites across the nation.

Photo courtesy of Le Bonheur Children's Hospital and the University of Tennessee Health Science Center.

Louisiana State University (LSU)

Environmentally Persistent Free Radicals

Particles from the thermal remediation of hazardous wastes, called environmentally persistent free radicals (EPFRs), are all around, and the LSU Superfund Research Center is studying how they may affect our health.

Led by Barry Dellinger, Ph.D., researchers at the Louisiana State University (LSU) SRP Center are investigating how:

- EPFRs that formed during remediation processes at Superfund sites are released into the air and impact the environment and human health.
- Exposure to EPFRs affects lung function and blood flow, leading to asthma and worsening recovery after ischemic events, such as heart attacks.
- EPFRs can also be formed in soils that have been contaminated with pentachlorophenol, a chemical used to preserve wood.
- The structure and chemical properties of particles affect EPFR formation and reactivity.
- To prevent the formation of EPFRs and how to destroy existing EPFRs in an efficient and inexpensive manner.
- The biological mechanisms behind EPFR toxicity may lead to pulmonary and cardiovascular harm in people.

LSU researchers engage people in communities close to Superfund sites to learn about their concerns and communicate their research findings. They also work with the Louisiana Environmental Action Network, a community organization with more than 100 affiliated groups.

24) IZÚCAR DE MATAMOROS, MEXICO, DISATER

http://www.ipsnews.net/2010/08/mexico-poisonous-pesticides-on-the-doorstep/

IZÚCAR DE MATAMOROS, Mexico, Aug 4 2010 (IPS) - "People want to get rid of the factory. It has to go. There's already been an accident," a taxi driver said on the drive to the pesticide p lant belonging to the Agricultura Nacional company in this southern Mexican city.

On the night of Mar. 24, life changed for the 70,000 people of this municipality in Puebla state, about 200 kilometres south of the Mexican capital.

An explosion at the Drago n Group's factory, which makes pesticides, weedkillers and fungicides, spewed out 300 kilograms of dimethoate, an organophosphate insecticide, that had toxic effects on some 750 people.

"The factory was shut down by the city council on the day of the accid ent, and after what happened we don't want it to operate again," retired high school teacher José Rincón, a member of the Citizen's Council of Izúcar de Matamoros, formed in response to the accident, told IPS.

Prolonged exposure to dimethoate can cause eye irritation, nausea, dizziness, respiratory failure and even death, according to the pesticide catalogue produced by the Interministerial Commission for the Control of the Production and Use of Pesticides, Fertilisers and Toxic Chemicals.

The industrial co mplex manufactured about 130 products containing dangerous active ingredients like pentachlorophenol, 2,4 -dichlorophenoxyacetic acid (2,4 -D), endosulphan and paraquat.

Fourteeen of the company's products were classified as highly dangerous, 30 as moderately toxic and 37 others as somewhat harmful, according to the Federal Commission for Protection against Health Risks (COFEPRIS).

COFEPRIS has authorised 7,313 brands of pesticides made by about 200 companies, including transnational corporations like Germany's Bayer and the U.S. Dow Chemical.

"It's a disgrace that these chemicals are still being used and that the government is doing nothing about them," Fernando Bejarano, head of the non -governmental Centre for Analysis and Action on Toxins and Their Alternatives (CAATA), told IPS.

"They are examples of backwardness and the lack of preventive public policies in regard to toxic substances. We have been left with the idea of letting industry regulate itself, a neoliberal approach," he said.

CAATA is pressing for the Mexican government to comply with the Stockholm Convention on Persistent Organic Pollutants, signed in 2001 and in effect since 2004, which seeks to eliminate or reduce pollutants like dioxins, chlorinated pesticides or furans.

EPA-HQ-2018-000065-0001836

Endosulphan is authorised for use on 42 different crops, including maize, cotton, beans, vegetables and coffee, according to CAATA. In 2006, 731 tonnes of the insecticide were imported by Mexico.

After the accident at its plant, Agricultura Nacional, which employed 200 people in Izúcar, transported 3,500 tonnes of materials to factories around the country.

Just a few hours later, protesters blocked the entrance to the plant. A few tents remain to testify to that demonstration. Yellow closure notices seal the doors of the factory.

"We didn't know anything about these things. We have had to learn about them along the way, in the process of our struggle," Rincón said.

The Citizens' Council is organising a public consultation, and planning a protest march for Sunday Aug. 1.

The Dragon Group, which owns Agricultura Nacional, became established in the area in 1986, producing powdered stone and rock for fertilisers to remineralise soils. In 1992 it added insecticide and pesticide manufacturing to its operations.

Around that time a group o f local residents began a resistance movement, in response to an accident that occurred many kilometres away from Izúcar.

On May 3, 1991, there was a fire and explosion at an Agricultura Nacional insecticide factory called Anaversa in Córdoba, a city in th e state of Veracruz, 354 kilometres southeast of the Mexican capital. The accident released and spread 18,000 litres of methyl parathion, 8,000 litres of paraquat, **1,500 litres of pentachlorophenol** and 3,000 litres of 2,4-D.

2,4-D was a major ingredient in Agent Orange, a defoliant used by the United States armed forces to spray jungles during the Vietnam war in the late 1960s and early 1970s, with serious environmental and health consequences.

Although there were no immediate deaths from the Anaversa accid ent, a toxic cloud bearing dioxins covered the city of Córdoba and also polluted the groundwater.

The number of cases of cancer and other serious illnesses began to climb throughout the city, the association of Anaversa victims, formed to fight for compens ation and medical care for the victims, told IPS.

The death toll from the consequences of the explosion stands at over 2,700 , according to the association's estimates. Agricultura Nacional paid a fine of 9,300 dollars, closed the Anaversa plant and focused on its operations in Izúcar.

In Mexico, the management of harmful chemicals is entangled in a legal labyrinth comprising nine laws, 11 sets of regulations and 36 specific standards, 20 of which apply to pesticides.

Looking ahead to the fifth Conference of the Parties to the Rotterdam Convention in Geneva in June 2011, its Chemical Review Committee has recommended including chrysotile asbestos, endosulphan and tributyl tin compounds, all harmful to human health, on the list of substances covered by this treaty.

In force since 2004, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade promotes shared responsibility, open exchange of information on prohibitions and restrictions, and safe handling of dangerous substances between importer and exporter countries, in order to preserve human health and the environment.

The fourth meeting of the Conference of the Parties to the Rotterdam Convention, held in Rome in October 2008, voted against including these chemicals in the Convention, in spite of intense campaigning to that effect by activists all over the world.

In Izúcar, the federal environmental prosecutor's office ruled in 2009 that the company had broken the General Law of Ecological Balance and Environmental Protection, but did not specify how it did so, or what corrective measures should be imposed.

After the March 2010 accident, however, it ordered the factory to be closed for six months pending an environmental audit.

"Products that have been proved to be toxic should be strictly banned. The scientific principles of precaution and substitution are not applied in this country, nor is there a chemical safety policy," said Bejarano.

CAATA wrote a letter to COFEPRIS summarising the facts about endosulphan, which has been banned in more than 60 countries and is being considered for a global ban under the Stockholm Convention. The letter included the results of studies carried out in Mexico.

"We have heard that the factory is going to be transferred to another municipality in Puebla state. That is a false solution: instead of polluting here, they will do it elsewhere," said Rincón.

In Córdoba, the association of Anaversa victims has called for a clean-up of the factory site, but this has not been done. The disaster was covered by the 2007 documentary film "El perro que ladra a la luna" (Barking at the Moon), by Spanish journalists Charo Ruiz and Sandra Soler.

In 1996, the people of Izúcar had scored a temporary victory when the authorities closed the plant, but it managed to reopen. Now they will settle for nothing less than shutting it down for good.

EPA-HQ-2018-000065-0001838

25) SUPERFUND - TAYLOR LUMBER AND TREATING - OREGON

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

EPA NATIONAL PRIORITIES LIST (NPL) June 2001

OSWER/OERR State, Tribal, and Site Identification Cente Washin gton, DC 20460

TAYLOR LUMBER AND TREATING
Sheridan, Oregon

Conditions at Proposal (December 1, 2000): In order to address the long-term threat to surface water, sediments, residential soils, and air, the EPA is placing this site on the NPL. The Taylor Lumber and Treating site is an active wood processing and treating business located approximately 1 mile west of Sheridan, Oregon. The wood treating facility began operating in autumn 1966. The wood treating facility's primary functions are to condition and pressure-treat wood products with preservatives in order to prolong the useful life of the products. Wood products treated at the facility include lumber, poles, pilings, posts, railroad ties, and plywood. Wood preserving chemicals, which historically have been used at this facility and are still in use, include petroleum-based creosote and pentachlorophenol (PCP) solutions. The wood treating chemicals are stored in aboveground storage tanks (ASTs) located in two separate tank farms.

26) SUPERFUND - AMERICAN CREOSOTE WORKS

The 18-acre American Creosote Works (Pensacola plant) site is in a dense, moderately commercial and residential area of Pensacola, Florida. A wood -preserving facility operated at this site from 1902 to 1981. During this time, process wastewater containing pentachlorophenol (PCP) was discharged into unlined, onsite surface impoundment ponds. Before 1970, these impoundment ponds were allowed to overflow through a spillway into neighboring bays. After 1970, wastewater was discharged to designated onsite spillage areas. Additional discharges occurred du ring periods of heavy rainfall when the ponds overflowed. In March 1980, the city found considerable quantities of oily, asphaltic, creosote material in the groundwater near the site. Because of the threat posed to human health and the environment, EPA an d the state performed an emergency cleanup in 1983. This included dewatering the ponds, treating the water, and discharging treated water into the city sewer system. The sludge in the ponds was then solidified and capped.EPA signed a record of decision (RO D) in 1985 requiring all onsite and offsite contaminated solids, sludge, and sediment to be placed in an onsite RCRA-permitted landfill. A second ROD, signed in 1989, addresses remediation of contaminated surface soil. A future ROD will address treatment o f contaminated subsurface soil, sludge, and groundwater. The primary contaminants of concern affecting the surface soil are organics, including dioxins, carcinogenic polycyclic aromatic hydrocarbons (PAHs), and PCP.

27) SUPERFUND – KOPPERS - BUTTE COUNTY, CALIFORNIA.

The Koppers site is a 200 -acre operating wood -treating plant in Butte County, California. Nearby land use is mixed agricultural, residential, commercial, and industrial. Although there is a history of wood -treating operations at the site, they were greatly

EPA-HQ-2018-000065-0001839

expanded in 1955 when Koppers Company, Inc., became the owner and operator. Pentachlorophenol (PCP), creosote, and chromated copper arsenate (CCA) solution are among the chemicals that have been used at this site. Wastewater discharge and other site activities have resulted in contamination of unlined ponds, soil, and debris. PCP was detected in onsite groundwater in 1971 and in residential wells in 1972. Pursuant to a state order, Koppers conducted cleanup activities from 1973 -74, including groundwater pumping and discharge to spray fields and offsite disposal of contaminated debris, and process changes, including construction of a wastewater treatment plant. In 1986, Koppers provided nearby residents an alternate water supply for domestic uses. Following a 1987 explosion and fire at a PCP wood -treatment process facility, EPA issued a removal order requiring cleanup of fire debris and removal and stabilization of surface soil. The present record of decision (ROD) addresses the remaining contamination in onsite soil and groundwater affected. The primary contaminants of concern are polycyclic aromatic hydrocarbons (PAHs), PCP, dioxins and furans, and metals including arsenic and chromium.

28) SUPERFUND - KOPPERS MORRISVILLE - NORTH CAROLINA.

The 52 -acre Koppers Morrisville site is a wood -laminating facility in Morrisville, Wake County, North Carolina. Surrounding land use is a mixture of commercial, light industrial, and rural residential. The site has been used by lumber companies since 1896. In 1962, Koppers began treating wood at the site using pentachlorophenol (PCP) and isopropyl ether injected into wood. Process wastes were put into unlined lagoons. Koppers discontinued wood treatment in 1975, but past wood -treatment processes and associated disposal activities have left the site contaminated with PCP, dioxins, and isopropyl ether affecting the soil, groundwater, and surface water. In 1989, in response to state studies of water contamination from the site, nearby residents began using public water line s instead of wells to obtain drinking water. In 1990, EPA required extensive studies of the soil, groundwater, drainage pathways, and ponds, and also determined that additional studies were needed to further assess contamination of the surface soil in the lagoon and wood-treatment process areas. In 1992, EPA completed a record of decision (ROD) for the site that specified incineration as the primary remedy and base -catalyzed decomposition (BCD) as the “contingency remedy” whose use would be dependent upon t he results of a treatability study. One driving force for providing for an alternative to incineration was the strong interest of the community. The primary strategy was offsite incineration of soil involving

EPA-HQ-2018-000065-0001840

29) SUPERFUND – ARKWOOD – ARKANSAS

The 15 -acre Ar kwood site is a former wood -treatment facility in Boone County, Arkansas. Land use in the vicinity of the site is primarily agricultural and light industrial. Approximately 200 residences are located within 1 mile of the site, and 35 domestic water supply wells are within 1.5 miles of the site. Groundwater on or near the site is highly susceptible to contamination as a result of underground cavities, enlarged fractures, and conduits that hinder monitoring and pumping. From 1962 to 1973, Arkwood operated a p entachlorophenol (PCP) and creosote wood treatment facility at the site. In 1986, the site owner dismantled the plant. State investigations conducted during the 1980s documented PCP and creosote contamination in surface water, soil, debris, and buildings throughout the site. Contaminated surface features at the site include the wood-treatment facility, a sinkhole area contaminated with oily waste, a ditch area, a wood storage area, and an ash pile. In 1987, EPA ordered the site owner to perform an immediate removal action that included implementing site access restrictions, such as fencing and sign postings. The present record of decision (ROD) addresses remediation of all affected media and provides the final remedy for the site. The primary contaminants af fecting the soil, sludge, debris, and groundwater are organics including PCP, polycyclic aromatic hydrocarbons (PAHs) and dioxins.

30) SUPERFUND SITE UNITED CREOSOTING – TEXAS

The 100 -acre United Creosoting site in Conroe, Montgomery County, Texas, is occupied by a residential subdivision, a distributing company, and a construction company. From 1946 to 1972, the United Creosoting Company operated a wood preserving facility at the site. Pentachlorophenol (PCP) and creosote were used in the wood-preservation p rocess, and process wastes were stored in waste ponds. During 1980, the county used soil and waste pond backfill from the site on local roads. After residents living near the improved roadways experienced health problems, the county sampled and compared leachate composition from the affected roadways and the site. They determined that leachate from both the site and the roadways was contaminated with PCP. Roadway soil was subsequently removed and disposed of using land farm treatment. In 1983, in response t o contaminated stormwater runoff from the former waste pond areas, the property owner was directed under terms of an EPA Administrative Order to regrade contaminated soil, divert surface water drainage away from the residential portion of the site, and cap the contaminated soil. The present record of decision (ROD) specifies a final remedy for contaminated soil at the site and complements a 1986 ROD that determined that no action was necessary to remediate shallow groundwater. The primary contaminants of co ncern affecting the soil are organics including polycyclic aromatic hydrocarbons (PAHs), PCP, and dioxins.

Since 1980, EPA has classified 56 wood preserving sites as Superfund sites . At about 40 of these sites, EPA has completed the process of selecting a cleanup strategy for the soil, sludge, sediments, and water contaminated by wood treatment wastes.

31) WEAPONS OF MASS DESTRUCTION

Weapons of Mass Destruction

An Encyclopedia of Worldwide Policy, Technology, and History

Eric A. Croddy and James J. Wirtz, Editors

Jeffrey A. Larsen, Managing Editor

Foreword by David Kay

Volume I: Chemical and Biological Weapons

Eric A. Croddy, Editor

Phenolic and phenoxy -type herbicides are other commonly used types. Phenolic herbicides are usually nitro - and chloro -derivatives of phenol. Examples are dinitrophenol, dinitro-ortho-cresol, and pentachlorophenol. These phenolic herbicides kill weeds by contact with foliage rather than by uptake through the roots. Thus, they also are called contact herbicides. Phenoxy-type herbicides were used as defoliation agents during the Vietnam War by the U.S. Army.

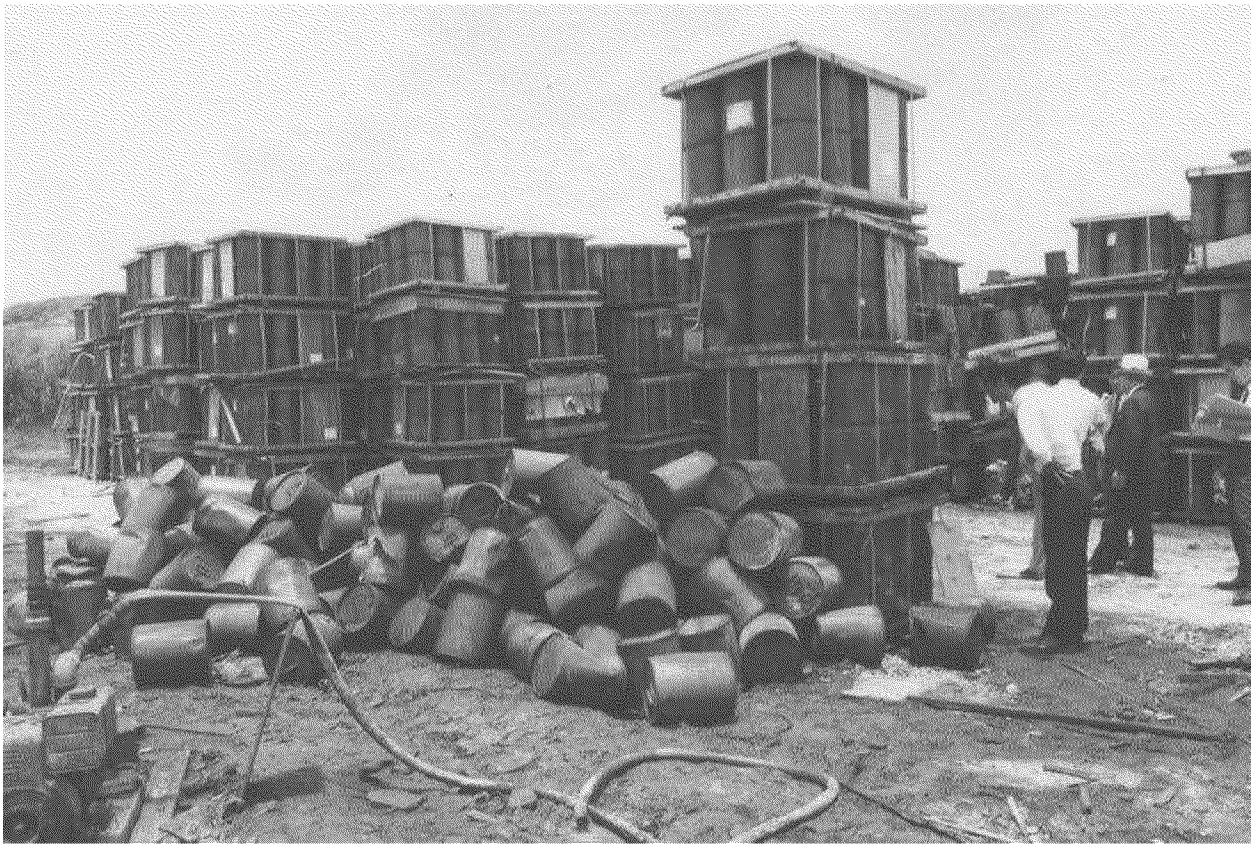
Bipyridylium (Paraquat, Diquat) herbicides compete with electron acceptors, which are necessary for continuous exchange of energy in photosystem I in photosynthesis, causing w eeds to die. Dinitrophenol, dinitro -ortho-cresol, and pentachlorophenol are toxic because they uncouple the oxidative phosphorylation used for energy transfer process in weeds.

EPA-HQ-2018-000065-0001842

1971: Surplus U.S. herbicides containing pentachlorophenol contaminate civilian water supplies in Haebaru and Gushikami districts.

http://www.japantimes.co.jp/community/2013/11/11/issues/okinawa-the-junk-heap-of-the-pacific/#.U80eB_ldWSq

Other U.S. veterans and Okinawa civilians interviewed by The Japan Times recall how surplus stocks of Agent Orange were sold on the black market to local farmers who valued its potent weed -killing power. The ri sks of the unregulated sale of hazardous substances to those lacking the necessary safety training became clear in 1971 when large volumes of **pentachlorophenol** herbicides — obtained from the U.S. military by a civilian company — were dumped in the Haebaru and Gushikami districts of southern Okinawa. The chemicals leaked into Kokuba River and the water supply to 30,000 people had to be halted; children attending local schools suffered from abdominal pains and nausea.



EPA-HQ-2018-000065-0001843

32) NON HODKINS LYMPHOMA (NHL)

National Toxicology Program
U.S. Department of Health and Human Services

Peer-Review Draft: Report on Carcinogens Monograph on Pentachlorophenol and By-Products of Its Synthesis August 28, 2013

http://ntp.niehs.nih.gov/ntp/about_ntp/monopeerrvw/2013/october/pcppeerrevdraft_508be.pdf

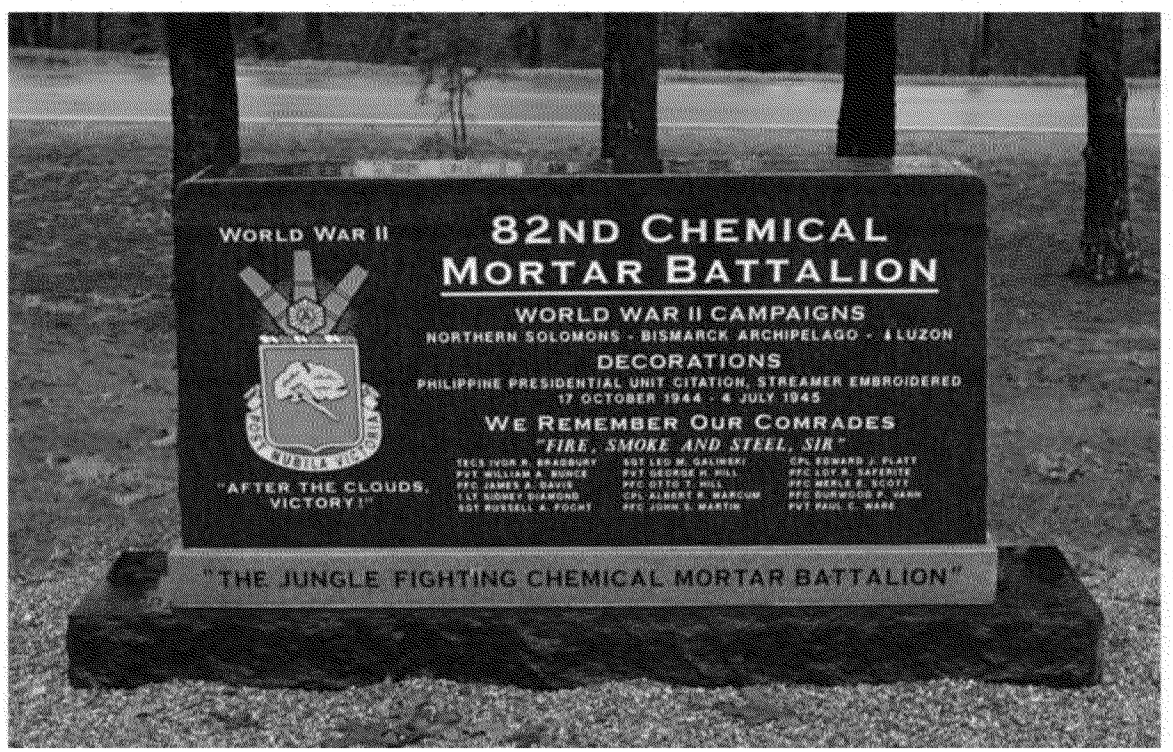
3.5.1 Synthesis

Overall there is credible evidence for an association between exposure to pentachlorophenol and NHL, based on consistent findings across studies in different occupational populations with varying co-exposures, different geographical areas and study designs, and strong evidence of positive exposure-response relationships in the most informative study (Demers et al. 2006). **An increased risk of NHL was found among workers exposed to pentachlorophenol in all of the studies specific for pentachlorophenol exposure.** These studies include all three cohort studies (Collins et al. 2009a/Ramlow et al. 1996, Demers et al. 2006, Ruder and Yiin 2011), the nested casecontrol study of IARC herbicide workers (Kogevinas et al. 1995) and two Swedish population-based case-control studies (Hardell et al. 1994, 2002). Although the strength of the evidence varied among the studies, the finding of increased risk of NHL in both cohort and case-control studies, which have different types of strengths and limitations increases the confidence in the body of studies. The strongest evidence comes from the large cohort of Canadian sawmill workers (Demers et al. 2006), which observed exposure-response relationships between cumulative dermal exposure to pentachlorophenol and both NHL mortality and incidence in lagged (10 and 20 years) and unlagged analyses. **This finding is supported by findings from the Michigan pentachlorophenol cohort, in which a statistically significant increase in NHL was observed among workers who were only exposed to pentachlorophenol** (Collins et al. 2009a). Analyses by exposure level found increases in NHL or NHL and multiple myeloma combined mortality among workers with at least one year of cumulative exposure (Ramlow et al. 1996) (in the earlier follow-up), and in the highest category of surrogates (chlorinated dioxins) for pentachlorophenol exposure in the subsequent follow-up (Collins et al. 2009a). The evidence for an association from the other individual studies with specific exposure information for pentachlorophenol (Hardell et al. 1994, 2002, Kogevinas et al. 1995, Ruder and Yiin 2011) is considered to be more limited, but as a group they provide evidence to support the associations found in the two most informative studies.

EPA-HQ-2018-000065-0001844

33) ALABAMA POISONED PATRIOTS OF FT. MCCLELLAN

Poisoned Patriots of Ft. McClellan



http://www.atsdr.cdc.gov/HAC/pha/pha.asp?docid=834&pg=4

http://www.lawenforcementtoday.com/2012/07/03/poisoned-patriots-of-ft-mcclellan/

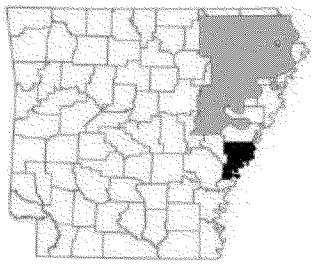
A series of three unlined industrial waste lagoons used from ~ 1960 to 1978 for storage of concentrated liquid chemical wastes and abrasive dust waste generated in the SIA. Liquid waste lagoons emptied by pumping wastes to A -Block lagoon (SWMU -22). Surface Soil: PAHs, PCBs, metals, and VOCs were detected above CVs. Subsurface Soil: **Elevated levels of arsenic, lead, mangane se, PAHs, PCBs, pentachlorophenol were detected.** The area occupies 145 acres of unpaved land in the southwest portion of the site. Several SWMUs are suspected as contaminant sources, including SWMUs 6, 9, 12, 14, 19, 20, 22, and 24. Groundwater: VOCs and pentachlorophenol were detected at levels above CVs.

34) ARKANSAS CEDAR CHEMICAL COMPANY

Cedar Chemical Company

STATE PRIORITY LIST SITE
WEST HELENA, ARKANSAS

ADEQ
5301 Northshore Drive
North Little Rock, Arkansas 72118



EPA ID No: AR990660649
AFIN: 54-00068
County: Phillips
Arkansas Senate District: 16
Arkansas House District: 13
US Congressional District: 1

Waste and Volumes

Hazardous substances detected in soils at concentrations greater than risk -based screening criteria include Arsenic, Cadmium, Mercury, Aldrin, Die ldrin, Dinoseb, Heptachlor, Methoxychlor, Toxaphene, 3,4 -Dichloroaniline, Propanil, Chloroform, 1,2 -Dichloroethane, Methylene Chloride, and **Pentachlorophenol.**

Hazardous substances detected in groundwater at concentrations greater than risk -based screening criteria and/or Maximum Contaminant Levels (MCLs) include Arsenic, Barium, Cadmium, Chromium, Lead, 4,4' -DDT, Alpha BHC, Aniline, 4 -Chloroaniline, Chlorobenzene, 1,2 -Dichlorobenzene, 1,3 -Dichlorobenzene, Chloroethane, 1,4 -Dichlorobenzene, 2,6-Dinitrotoluene, 3,4-Dichloroaniline, 4Chlorozniline, Dinoseb, bis(2-Chloroethyl)ether, bis(2 -Ethylhexyl) phthalate, 1,2 -Dichloroethane, 4Methyl -2-Pentanone, 2Methylphenol, Acetone, Benzene, Chloroform, Vinyl Chloride, Methylene Chloride, Trichloroethene, 1,1,2Trichlor oethane, 1,2 -Dichloropropane, Bromodichloromethane, Bromoform, Dibromochloromethane, and Toluene.

In summary, the surface soils and subsurface soils are contaminated with pesticides, volatile organics, and heavy metals. The onsite surface water bodies and groundwater are contaminated with volatile organics and heavy metals. The sediments are contaminated with pesticides and heavy metals.

Eighty (80) Solid Waste Management Units (SWMUs) (including approx. 30 sumps and 10 drum/drum storage/drum crushing areas) have been identified onsite to date that are deemed areas of concern.

35) POSITION DOCUMENT # 4 – AWAP 9101AITZ

LINK TO DOCUMENT CLICK HERE

United States Environmental Protection Agency

Office of Pesticides and Toxic Substances Washington DC 20460

July 1984

Pesticides

EPA

Wood Preservative Pesticides: Creosote Pentachlorophenol Inorganic Arsenicals

Position Document 4

The three wood preservatives considered in this Position Document 4 are creosote, which includes creosote, coal tar and coal tar neutral oil; the inorganic arsenical compounds, which include chromated copper arsenate (CCA), ammoniacal copper arsenate, (ACA), and fluor chrome arsenic phenol (FCAP); and pentachlorophenol, including its sodium salt. These pesticides preserve wood against attack by fungi, insects, bacteria, and marine borers. Treated wood generally has a useful life at least five times longer than untreated wood.

- Prohibit application of the wood preservative pesticides in a manner which may result in direct exposure to domestic animals or livestock, or in the contamination of food, feed or drinking and irrigation water.

- Require control technologies to reduce arsenic surface residues on the treated wood.

In light of the high economic benefits resulting from the use of the wood preservative chemicals, the Agency determined in the PD 2/3 that the use of the wood preservative chemicals in accordance with these modifications would satisfy the statutory standard for continued registration.

The term "unreasonable adverse effects on the environment" is defined as "any unreasonable risk to man or the environment, taking into account the economic, social and environmental costs and benefits of the use of any pesticide" FIFRA § 2(bb). To register a pesticide, the Administrator must find that the benefits of each use of the pesticide exceed the risks of use, when the pesticide is used in accordance with commonly recognized practice and in compliance with the terms and conditions of registration.

The burden of proving that a pesticide satisfies the registration standard is on the proponents of registration and continues as long as the registration remains in effect. Under section 6 of FIFRA, the Administrator may cancel the registration of a pesticide or modify the terms and conditions of registration whenever it is determined that the pesticide causes unreasonable adverse effects on the environment. The Agency created the RPAR process to facilitate the identification of pesticide uses which may not satisfy the statutory standard for registration and to provide an informal procedure to gather and evaluate information about the risks and benefits of these uses.

36) TEXAS SCHOOL

http://www.yourhoustonnews.com/courier/news/health-issues-concern-former-students/article_219a5e8d-42b3-5aeb-9d7e-155724b29525.html

Posted: Saturday, June 7, 2014 10:33 pm

By **Kimberly Sutton**

Cynthia Hancock has **been battling illnesses for much of her adult life** — sickness she believes is directly related to exposure to chemicals or waste that affected numerous students at **Wilkerson Intermediate School** in The Woodlands in the 1970s and early 1980s.

Hancock's medical conditions are similar to more than a hundred former students found by Chuck Foreman, a 1986 Oak Ridge High School graduate, and he has many friends he believes have battled lifelong illnesses associated with the strong odor that permeated throughout the school more than 30 years ago. Foreman's plight now is to find the cause of these debilitating and possibly deadly illnesses and determine whether students and residents in the area along Sawmill Road still could be affected by it.

Foreman said the soil underneath Wilkerson Intermediate is possibly contaminated by the old Grogan-Cochran Sawmill that was located at Tamarac Park, off of Woodlands Parkway. He believes the flood runoff could have taken the chemicals all the way to the Wilkerson Intermediate area near Grogan's Mill Road and Sawmill Road.

"The wood-preserving industry pressure treats wood with chemicals that protect against insects and fungus," according to a document "Cleaning Up Contaminated Wood-Treating Sites," published by Princeton University. "Just a few preserving chemicals have been widely used by the industry. The oldest preservative process treats wood

with creosote, a tarry liquid derived from coal. Pentachlorophenol (PCP) became widely used as a preservative after 1950, although its purchase and use is now restricted."

According to the CDC, people may be exposed to phenol if they live near landfills or hazardous waste sites that contain phenol or near facilities manufacturing phenol. Low levels of phenol can be present in air and drinking water, some foods and from smoking or inhaling secondhand smoke.

37) CONNETICUT - DURHAM MEADOWS SUPERFUND SITE

http://www3.epa.gov/region1/superfund/sites/durham/238284.pdf

News Release
U.S. Environmental Protection Agency
New England Regional Office
October 26, 2015

Contact: Jim Murphy, (617) 918-1028

Cleanup project to install new water supply for properties contaminated by Durham Meadows Superfund Site

BOSTON – **EPA has allocated $9 million to jump start cleanup activities** at the Durham Meadows Superfund site in Durham, Conn. The funding will support the installation of an alternative water supply to the Superfund site area, serving over 100 residential and commercial structures, including Regional School District 13. Many of the homes and businesses to be connected have treatment systems or are being provided bottled water as a result of **widespread groundwater contamination.**

"This EPA funding will initiate the work to install the alternative water supply for the residents and businesses of Durham. We are excited that this means the important work to address groundwater contamination and ensure clean drinking water will begin next year," said Curt Spalding, regional administrator of EPA's New England office. "EPA appreciates the hard work and partnership of the Town of Durham, the City of Middletown, the Conn. Dept. of Energy & Environmental Protection (DEEP), and the Conn. Dept. of Public Health to help EPA make this happen."

"Moving this project forward brings us closer to a positive ending to a long and troubling saga for residents and businesses in this area," said DEEP Commissioner Robert Klee. "With federal and state funding now in place we are moving forward to provide safe drinking water to families and to clean chemical contamination that has remained in the ground for far too long."

In the past, the Durham Manufacturing Company (operating) and the former Merriam Manufacturing Company polluted soil and groundwater with TCE and other chlorinated solvents in the area of Main Street in Durham. As a result, water in many **private potable wells in Durham is unsafe to drink.**

EPA, DEEP, DPH, the Town of Durham, and the City of Middletown have been working together for many years to provide temporary and permanent remedies for the homes with polluted wells. A public water main from Middletown to Durham will be the permanent remedy. EPA received $9 million for the federal fiscal year of 2015 to start construction of the water main. DEEP has received $3 million from the Bond Commission for the state's cost share, as required bySuperfund, to support construction of the water main and other remedial actions at the site. EPA and DEEP are happy to see this project moving forward.

"I made a commitment to the residents of the Town of Durham that bringing clean water to the contaminated areas within the Superfund would be a priority. Thanks to the dedication of our partners at EPA, DEEP, DPH and the City of Middletown, our residents will be assured of a clean and safe water supply," said Town of Durham's First Selectman, Laura L. Francis.

The Durham Meadows Superfund Site includes an area of groundwater contamination associated with past disposal practices at the Durham Manufacturing Co. and the former location of Merriam Manufacturing Co. In 1982, the Conn. Dept. of Environmental Protection (now the Conn. Dept. of Energy & Environmental Protection (CT DEEP)), detected volatile organic compounds (VOCs-commonly found in solvents, paints and degreasers) in private drinking water wells in the Durham Center area, including trichloroethylene (TCE).

Under a state order, the companies installed granular activated carbon filtration units on impacted residential wells. To date, 50 private wells serving 54 locations have found to be contaminated. These homes have water treatment systems to remove contamination. In 2005, EPA issued a Record of Decision outlining the cleanup action for the Site, including the extension of an alternate water supply from the City of Middletown Water Distribution System to address the overall area of Site-wide groundwater contamination. Since 2005, EPA has been developing the design for the water line with support from the Town of Durham, City of Middletown, CTDEEP, and CTDPH. EPA also completed the cleanup of the former Merriam Manufacturing Company property in 2012and is working on the design to perform a cleanup at the Durham Manufacturing Company.

Superfund is the federal program that investigates and cleans up the most complex, uncontrolled or abandoned hazardous waste sites in the country. This year marks the 35th anniversary of the enactment of the Comprehensive Environmental, Response, Compensation and Liability Act, the law establishing the Superfund program. Superfund's passage was a giant step forward in cleaning up hazardous waste sites to help ensure human health and environmental protection through long-term and short-term cleanup activities. Cleanups not only address environmental and human health threats, but often lead to positive economic benefits in the communities where cleanups occur including job creation and enhanced local tax bases.

More information:

Previous work to cleanup of the Durham Meadows Superfund Site (http://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0100108)

General information on Superfund program (http://www.epa.gov/superfund)

38) EPA DURHAM MEADOWS SUPERFUND SITE $23 MILLION.

http://www.highbeam.com/doc/1G1-281460432.html

The cleanup of hazardous waste at a Durham Meadows Superfund Site in Connecticut may cost about $23 million, according to U.S. Environmental Protection Agency officials.

Though the environmental cleaning is no cost to the town, the agency is hoping to receive a portion of the money from a proposed settlement with Merriam Manufacturing and entities related- Aztec Industries, LLC and the estate of Allam Adams, the agency's New England project manager, Anni Loughlin, said.

In a consent decree filed on Jan.11, the above companies agreed to what Loughlin calls a "stipulated judgment" in the amount of $20.1 million to help recover some of the costs to remove contaminated soil. ...

LINKS
http://patch.com/connecticut/durham/update-durham-meadows-superfund-cleanup
http://www.townofdurhamct.org/filestorage/27536/PowerPoint_Presentation_12-16-2014.pdf

SVOC compounds in the bedrock groundwater were generally detected at low concentrations. Elevated concentrations of benzo(a)pyrene were noted at 176 Main Street and 268 Main Street, southwest of MMC. An elevated concentration of **pentachlorophenol** was noted at 176 Main Street and the Strong School contained bis(2-ethylhexyl) phthalate at an elevated concentration

For the current resident using untreated groundwater as household water, carcinogenic and noncarcinogenic risks exceeded the EPA acceptable risk range of 10"4 to 10"*and/or a target organ HI of 1 for 35 of the private wells. The cumulative carcinogenic risks range from 2 x 10"4 to 3 x 10"2 and the target organ His range from 2 to 900. The exceedances were due primarily to the presence of benzene, 1,2 - dichloroethene, cis -l,2-dichloroethene, 1,2 -dichloroethane, 1,4 - dioxane, methylene chloride, tetrachloroethene, trichloroethene, vinyl chloride, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, bis(2 -ethylhexyl)phthalate, dibenz(a,h) anthracene, indeno(l,2,3 -cd)pyrene, **pentachlorophenol,** arsenic, and vanadium in bedrock groundwater used for potable purposes.

For the future resident using untreated groundwater as household water, carcinogenic and noncarcinogenic risks exceeded the EPA acceptable risk range of 10"4 to 10"6 and/or a target organ HI of 1 for Site -wide bedrock groundwater. The cumulative carcinogenic risk was 4 x 10"2 and the target organ HI was 900. **The exceedances were due primarily to** the presence of benzene, 1,2 - dichloroethene,

EPA-HQ-2018-000065-0001851

cis-l,2-dichloroethene, 1,2 -dichloroethane, 1,4 -dioxane, methylene chlor ide, tetrachloroethene, trichloroethene, vinyl chloride, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, bis(2-ethylhexyl)phthalate, dibenz(a,h) anthracene, indeno(l,2,3-cd)pyrene, **pentachlorophenol,** arsenic, mercury, and vanadium in bedrock groundwater used for potable purposes.

39) DIOXIN POISONING – PENTACHLOROPHENOL

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Review

Dioxins: An overview

Arnold Schecter[a,*], Linda Birnbaum[b], John J. Ryan[c], John D. Constable[d]

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[b]Office of Research and Development, Experimental Toxicology Division, National Health and Environmental Effects Research Laboratory, US Environmental Protection Agency, Research Triangle Park, NC 27711, USA
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Received 20 July 2005; received in revised form 22 November 2005; accepted 5 December 2005

Abstract

This review article summarizes what is known about human health following exposure to dioxins. It is meant primarily for health professionals but was also written with the general public in mind. The need for such an article became apparent to the authors following media inquiries at the time the then Ukraine presidential candidate Victor Yushchenko was deliberately poisoned with the most toxic dioxin, tetrachlorodibenzodioxin or TCDD.
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Keywords: Dioxins; Poisoning; Yushchenko; Agent orange; TCDD

The patterns of dioxins and dioxin -like chemicals reflect their sources. To a specialist the measured dioxin congener patterns in blood or other tissues can be as informative as an electrocardiogram to a cardiologist. Table 2 shows patterns in patients from different dioxin exposures. **The first is an American with massive pentachlorophenol exposure** (Ryan et al., 1987). Primarily higher chlorinated (with 5–8 chlorines) dioxins and PCD Fs are noted compared to the background level of the general American population (Schecter et al., 1990b). The second shows blood from an Agent Orange-exposed Vietnamese with marked elevation of TCDD, the characteristic dioxin of Agent Orange (Schecter et al., 2001a). The third shows

While chloracne sometimes lasts foryears, even decades in some cohorts, the cases usually resolved within 1 year in the Seveso children. In another population, Coenraads

et al. (1999) found that chloracne occurred in all seven Chinese chemical workers who had TEQ blood lipid levels greater than 1000 ppt after producing the biocides pentachlorophenol and hexachlorocyclohexane (Coenraads et al., 1999).

Fig. 2. President Viktor Yushchenko of Ukraine before and after dioxin poisoning with 2,3,7,8-TCDD (courtesy of the Associated Press).

http://emedicine.medscape.com/article/819776-overview

https://en.wikipedia.org/wiki/Chloracne

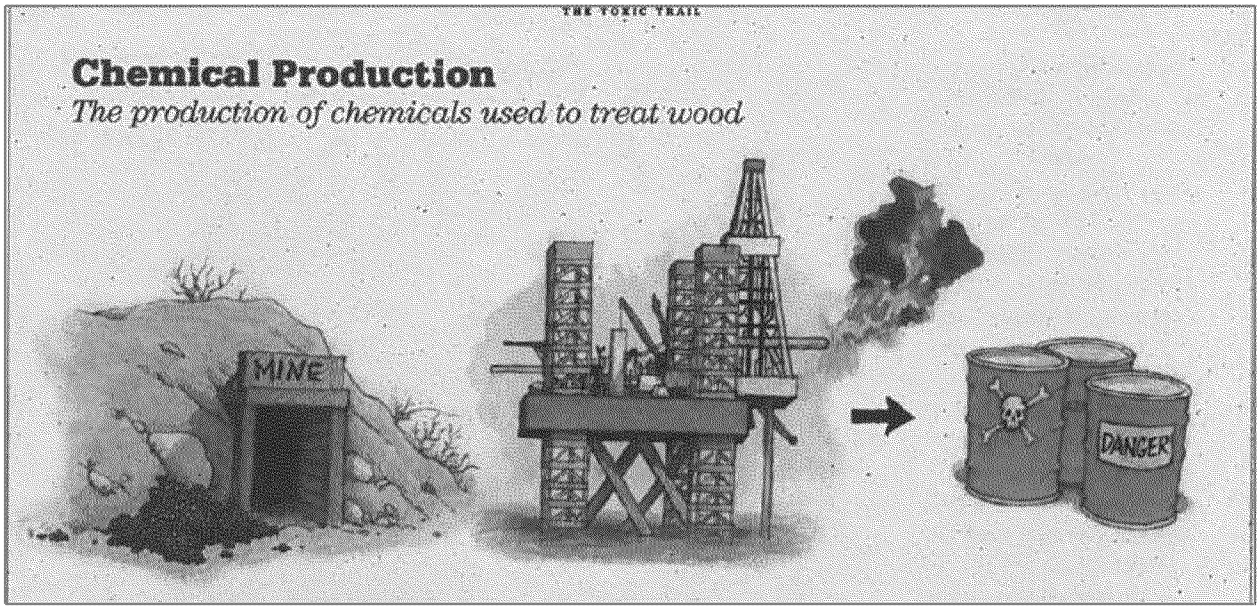
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2835904/

Environmental pollutants can result in a variant of acne called 'chloracne'. Chloracne is caused by systemic exposure to certain halogenated aromatic hydrocarbons 'chloracnegens', and is considered to be one of the most sensitive indicator s of systemic poisoning by these compounds. Dioxin is the most potent environmental chloracnegen. Most cases of chloracne have resulted from occupational and non - occupational exposures, non-occupational chloracne mainly resulted from contaminated industrial wastes and contaminated food products. Non -inflammatory comedones and straw-colored cysts are the primary clinical manifestation of chloracne. Increasing of

cysts in number is a signal of aggravation of chloracne. Generalized lesions can appear on the fa ce, neck, trunk, exterimities, genitalia, axillary and other areas. Course of chloracne is chronic. Severity of chloracne is related to dosage of exposed chloracnegens, chloracnegenic potency and individual susceptibility. Histopathology of chloracne is ch aracterized mainly by hyperplasia of epidermal cell, while follicular and sebaceous gland are taken placed by keratinized epidermal cell. The pathogenesis of chloracne maybe related to the imbalance of epidermal stem cell. Chloracne appears to be resistant to all tested forms of treatment. The only way to control chloracne is to prevent exposure to chloracnegens.

40) THE TOXIC TRAIL

http://www.beyondpesticides.org/programs/wood-preservatives/publications/poison-poles



41) MISSISSIPPI RIVER VALLEY ALLUVIAL AQUIFER

The most frequently detected compound, pentachlorophenol, was found in 98 of the 396 drinking water wells and in 15 of the 231 irrigation/fish culture wells sampled. Pentachlorophenol is now restricted to wood use only and can probably be excluded as an agricultural chemical.

A fish consumption advisory was issued for this lake in 1987 following several fish kills due to spills of wood treating mate rial including pentachlorophenol . Dioxin contamination has been documented in this lake, and fish have been analyzed for dioxin on four occasions, the most recent of which was September and October 1997. MDEQ is considering removal of the Dioxin advisory, however a PCP advisory is still in effect. Right side fillets collected for the dioxin study will be used to determine what levels of PCP's persist in the fish. The results are given in Table III-32 and indicate that dioxin is declining in fish in the lake.

OPC Environmental Damage Assessments

Country Club Lake and Mineral Creek near Hattiesburg (1990-1997) A wood preserving facility was located in the watershed of this 60 -acre impoundment in a subdivision northwest of Hattiesburg, Mississippi. **From 1974 to 1987, the lake was severely impacted by discharges of pentachlorophenol (PCP).** In 1987, a fish consumption advisory was issued for the lake. Fish were sampled from Mineral Creek (tailwaters of Country Club Lake) in June 1990.

42) GREECE DRINKING WATER POISONING

http://www.srcosmos.gr/srcosmos/showpub.aspx?aa=5483

CONTAMINATION OF DRINKING WATER SOURCES BY WOOD-PRESERVING CHEMICALS IN IOANNINA AREA (N.W. GREECE)

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[3]Dept. of Chemistry, University of Crete, Iraklio, Greece.

ABSTRACT

The case of contamination by creosote compounds of an aquifer that constitutes a major drinking water source in t he area of Ioannina in northwestern Greece is presented. Creosote intrusion from a wood treatment facility located in the vicinity of the aquifer as potential source of pollution is investigated. Phenolic compounds (phenol, m-cresol, o-cresol, p-cresol, 3,5 xylenol and pentachlorophenol) were detected periodically both in water and soil samples from monitoring wells at concentration levels above 0.1 μg/L and 0.01μg/g respectively during the monitoring period. Creosote component compounds such as naphthalene, fluoranthene, pyrene, 9H-fluorene, phenanthrene, Benzo[a]pyrene and isomers were also determined at detection levels fro m 0.09 to 1005 ng/g in the vadoze zone showing higher concentration in the upper soil layers.

The aquifer of Toumba is located northwest of the city of Ioannina and occurs in unconsolidated formations composed mainly of fine -to-coarse sand and clay deposi ts on limestone substrate. The saturated zone occurs from a depth of 30m to the surface in the form of spring fed pond. **The aquifer is a principal source of water supply in the area. A wood preserving industry where creosote oil and pentachlorophenol are used was located in the vicinity of the aquifer.**

43) TIMES BEACH MISSOURI IS A GHOST TOWN

Times Beach is a ghost town in St. Louis County, Missouri, United States, 17 miles (27 km) southwest of St. Louis and 2 miles (3 km) east of Eureka. Once home to mor e than two thousand people, the town was completely evacuated early in 1983 due to a dioxin contamination that made national headlines. It was the largest civilian exposure to dioxin in the country's history.

http://www.nytimes.com/1984/07/12/us/epa-to-limit-the-sale-of-3-wood-preservatives.html

https://en.wikipedia.org/wiki/Times_Beach,_Missouri

http://www.stlmag.com/Remember-Times-Beach-The-Dioxin-Disaster-30-Years-Later/

http://www.atsdr.cdc.gov/PHS/PHS.asp?id=361&tid=63

Pentachlorophenols contains dioxin, albeit an isomer considerably less toxic than the dioxins that contaminated Times Beach, Mo.. The use of pentachlorophenols will be prohibited for wood intended to be us ed indoors except for millwork and support structure.

******* THE EPA RE REGIASTERED PENTACHLOROPHENOL FOR USE IN 2008 EVEN AFTER THIS DIASTER AND MANY OTHER DISATERS .... *****

http://catastrophemap.org/toxic-apocalypse-times-beach.html

Permanently evacuated in 1985, Times Beach Missouri is literally Nowheresville, USA

TOWN OF 2240 PERMANENTLY EVACUATED IN 1985

Is it our imagination, or was there once a town by the name of Times Beach about 17 miles from St. Louis, MO? Yes, but the citizens voted the town out of existence and the place was permanently evacuated in 1985 due to dioxin toxicity.

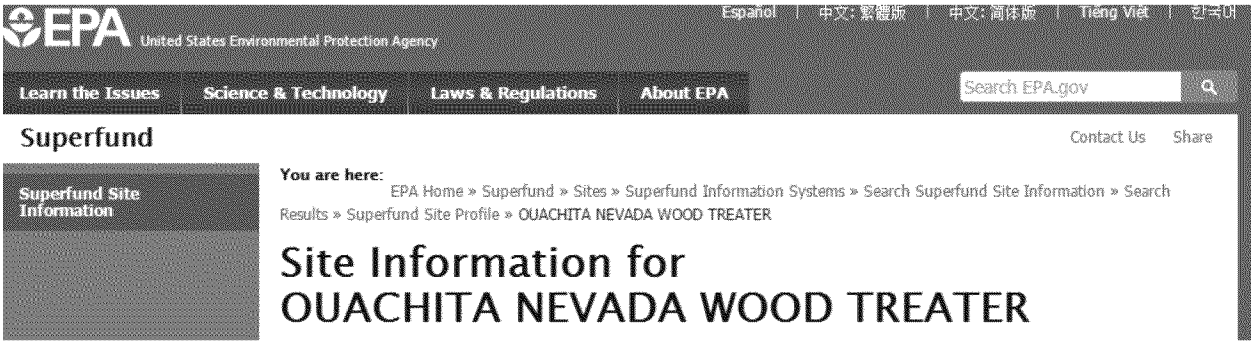
SHUNNING THE REFUGEES

The EPA announcements set into motion a series of fear driven events. From this point on, every cold, miscarriage or dead pet was attributed rightly or wrongly, to the dioxin. After a flood and a series of unpleasant public debates, the town aldermen unanimously voted themselves out of existence on April 2, 1985. The action was approved by Governor John Ashcroft. Ultimately, the buyout package for Times Beach totaled $32 million.

By late 1985, the town was evacuated except for one elderly couple who refused to leave, and the site was quarantined. Residents were shunned in their new communities by people who feared the effects of exposure to dioxin were contagious. Many of the town's citizens sued Bliss, NEPACCO, and its various subcontractors. Although the ethics and legality of Bliss' practices has been questioned, Bliss was never implicated or convicted of any crime.

44) OUACHITA NEVADA WOOD TREATER

http://cumulis.epa.gov/supercpad/cursites/dsp_ssppSiteData1.cfm?id=0604486



EPA's Involvement at this Site

On March 21, 2000, EPA began a time-critical removal action at the Site. The removal action addressed all aboveground sources of contamination, including tanks, drums, and impoundments, as well as all soil exceeding the 50 mg/kg action level for either **arsenic or pentachlorophenol. Approximately 4,065 tons of contaminated soil were** excavated and disposed of. The removal action was completed on June 24, 2000.

EPA signed a Record of Decision (ROD) for the Site on September 28, 2005. The ROD, which sets forth the selected remedy for the Site, involves actions to address pentachlorophenol (PCP) **contamination in groundwater**. The major components of the remedy are:

HALEY ALDRICH www.haleyaldrich.com

http://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/Phase%20II%20Narrative%20-%20Super%20Salvage%20Property.pdf

PHASE II SOIL AND GROUNDWATER INVESTIGATION REPORT VOLUNTARY CLEANUP PROGRAM SUPER SALVAGE, INC., PARCEL AT BUZZARD POINT, SQUARE 0605, LOT

WASHINGTON, D.C

Heavy staining of concrete (soil sample location GSS-605-802-11): Groundwater samples were not collected.

 Oil layer in secondary containment under AST (sample locations GTW-605-802-1 and GTW-605- 802-2): Arsenic was detected at concentrations above groundwater screening levels. Reported detection limits for thallium and select semi-volatile organic compounds ([SVOCs]; benzo[a]pyrene, and pentachlorophenol) were elevated above groundwater screening levels.

 Concrete staining next to northern AST (sample location GTW-605-802-9): Antimony, arsenic, lead, and methylene chloride were detected at concentrations above groundwater screening levels. Reported detection limits for thallium, select VOCs (1,2-dibromo-3-chloropropane, 1,2- dibromoethane and vinyl chloride), and select SVOCs (benzo[a]pyrene, hexachlorobenzene, and pentachlorophenol) were elevated above groundwater screening levels.

 Impacts to the adjacent property (sample locations GTW-605-802-6 and GTW-605-802-7): Lead and methylene chloride were detected at concentrations above the groundwater screening level. Reported detection limits for thallium, select VOCs (1,2-dibromo-3-chloropropane, 1,2- dibromoethane and vinyl chloride), and select SVOCs (benzo[a]pyrene, and pentachlorophenol) were elevated above groundwater screening levels.

The reported concentrations of arsenic in groundwater above the groundwater screening level may be within naturally occurring background at the Site, and if so, would not warrant remediation. Although detection limits for SVOCs (benzo(a)pyrene, hexachlorobenzene, and pentachlorophenol)

45) THE OESER COMPANY - ONE OF AMERICA'S MOST CONTAMINATED HAZARDOUS WASTE SITES

http://www.whatcomwatch.org/php/WW_open.php?id=689

his is the Oeser Company (formerly the Oeser Cedar Company) —a 26-acre **wood treatment** plant on the outskirts of Marine Drive. In August 2005, Oeser agreed to a complete compensation of $8.6 million for federal cleanup cost. This decision was made eight years after the EPA targeted the Oeser site for its unsafe level of toxins and possible connection to water contamination in Little Squalicum Creek. The facility had been treating cedar since the 1940s, an era where environmental law was far from becoming a perfected science.

"Many wood companies tend to have messy operations, as is historically shown," said Mary Jane Nearman, Oeser project manager through the EPA. Oeser's facility is no

exception to this statement. **The company, which is now more than 75 years old, has had multiple emergency situations throughout its complex history.** Chris Sechrist, president of Oeser, was the only designated authority to speak on the company's behalf and he was unavailable for comment during the writing of this article.

While many of Oeser's employees are aware of health risks while working, they may not have realized the risks they ran simply by living near the facility. The Department of Ecology's memo stated Oeser's discharge levels into Bellingham Bay through an "unknown tributary" which was later titled Little Squalicum Creek. The memo stated "urban runoff is undoubtedly picking up unknown quantities of animal wastes, lawn and garden fertilizers and possibly septic tank contamination." The original intention of the memo was to discover levels of phenol and pentachlorophenol, chemicals used during the time to treat Oeser's lumber. Despite the detection of organic contamination, the memo later stated that Oeser had a minimal effect on its receiving waters

http://www3.epa.gov/region10/pdf/sites/oeser/oeser_first_fyr_09302011.pdf

http://yosemite.epa.gov/r10/nplpad.nsf/0/662f42372330c19c85256594004a633a!OpenDocument

46) CALIFORNIA

https://clu-in.org/download/contaminantfocus/dnapl/Treatment_Technologies/Visalia_pyrolysis_1998.pdf

http://www.nbcbayarea.com/investigations/Chemical-Leak-at-Livermore-Oil-Field-May-Have-Contaminated-Some-Alameda-County-Water-Supplies-353092171.html

http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/vwsoalphabetic/Southern+California+Edison+Co.+(Visalia+Poleyard)?OpenDocument

https://www.llnl.gov/news/llnl-technology-cleans-visalia-superfund-100%C2%A0years-ahead-schedule

http://water.ca.gov/storage/docs/NODOS%20Project%20Docs/NODOS_Prelim_Admin_Draft_EIR/Appendixes/APP_28A_28B_and_28C_prelim_admin_draft_Dec2013.pdf

47) VERMONT DEPARTMENT OF HEALTH

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3558766/

In 2009, after resident calls regarding an odor, the Vermont Department of Health and state partners re sponded to 2 scenarios of private drinking water contamination from utility poles treated with pentachlorophenol (PCP), an organochlorine wood preservative used in the United States. Public health professionals should consider PCP

EPA-HQ-2018-000065-0001861

contamination of private water if they receive calls about a chemical or gasoline -like odor with concurrent history of nearby utility pole replacement.

48) HAVERTOWN, PENNSYLVANIA.

https://en.m.wikipedia.org/wiki/Havertown_Superfund

Havertown Superfund refers to the polluted groundwater site in Havertown, Pennsylvania. While its designation as a Superfund cleanup site did not occur until the early 1990s, the site's environmental hazards had been identified as early as 1973.

In 1947, Natural Wood Preservers established a wood treatment plant at the intersection of Eagle Road and West Hillcrest Avenue in Havertown, Pennsylvania. During its operation in the treatment of the wood, hazardous chemicals (including oil, dioxins, and pentachlorophenol) were created as waste products. Natural Wood Preservers disposed of these waste products, untreated, into an on -site well. These chemicals fed directly into Naylor's Run Creek and eventually into the Delaware River, for which the creek is a tributary.

This disposal of hazardous waste continued for a minimum of several decades during the company's ownership of the site, which ended in 1991. During the company's 44 -year ownership, both local and federal government bodies attempted to force Natural Wood Preservers to stop their dumping and clean up the existing pollution.

49) CALIFORNIA EDISON CO. (VISALIA POLEYARD), VISALIA, CA

http://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0902061

The 20-acre Southern California Edison Co. (Visalia Poleyard) site in Visalia, California, was a utility pole treatment yard from the 1920s to 1980. Leaking tanks and stored treated poles contaminated groundwater and soil with chemicals, including creosote and pentachlorophenol (PCP). Following cleanup, EPA took the site off the Superfund program's National Priorities List (NPL) in 2009.

http://abc30.com/news/tulare-county-residents-caught-in-the-middle-of-a-battle-over-water/1097038/

50) BAXTER/UNION PACIFIC TIE TREATING, LARAMIE, WY

http://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0800792

The 140-acre Baxter/Union Pacific Tie Treating site is located along the Laramie River in Laramie, Wyoming. The Union Pacific Railroad (UPRR) operated the plant for the treatment of railroad ties and other wood preserving operations on an intermittent basis

from 1886 to 1983. Historical spills and disposal practices contaminated soil and groundwater with hazardous chemicals.

51) HAWAII DIOXIN CONTAMINATION CONFIRMED WOOD PLANT

http://www.environment-hawaii.org/?p=3505

The Campbell Industrial Park lot once occupied by the Chem -Wood Treatment Co. is heavily contaminated with a variety of chemicals used to make lumber termite -resistant during the 15 years that the company was in business. Among the contaminants are pentachlorophenol, a wood preservative, and a dioxin that is a byproduct of penta's manufacture. Both are extremely toxic to humans.

The Chem-Wood plant at 91-476 Komohana Street began treating lumber for protection against insect damage in 1973. Before that time, the site had been used for wood -treatment by another operator, Hawai`i Wood Preserving Co.

Chem-Wood employed two processes. One, in use from 1973 until the plant closed in October 1988, involved pressure-treating wood with chromated copper arsenate (CCA). The other, in use from 1983 until 1988, treated wood with pentachlorophenol (also known as penta or PCP). Penta as manufactured usually contains dioxins as a contaminant, in concentrations as high as the hundred part-per-million range. This is the source of the dioxin contamination.

Extremely high levels of pentachlorophenol continue to be present in groundwater samples. Unlike the metal contaminants, the plume of penta contamination has trended downslope of the site. Wells on the Precision Wood lot (to the south of Chem -Wood) exhibited some of the highest concentrations of penta contamination in the January 1995 testing. One well showed pentachlorophenol at 170 mg/L in 1 995, when testing of the same well in 1993 found concentrations of 15.9 mg/L.

In summarizing the well tests, Woodward -Clyde writes: "The lateral extent of contamination measured in January 1995 appears to be somewhat smaller than the extent detected in November 1993, although this may be partially an artifact of the fewer number of localities sampled in January 1995. Overall, the concentrations of copper and pentachlorophenol measured in January 1995 were lower than levels measured in November 1993, while t he measured concentrations of arsenic, chromium, and hexavalent chromium were, on average, roughly similar."

Penta

Workers at the Chem -Wood site today wear moon suits and masks if they are doing tasks that may expose them to penta. The precautions are in k eeping with the toxic nature of the chemical.

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On the basis of animal studies, scientists believe that a 150 -pound person would die following oral ingestion of 1.09 ounces of a 10 -percent penta solution or dermal absorption of 4.4 ounces. In 1956, a tank -truck driver who splashed a mixture of diesel oil and penta on his hand died within 24 hours. A detergent whose formulation included penta was found to be the cause of death of a newborn in 1966.

Sublethal doses have been linked to acute leukemia, Hodgkin's and non -Hodgkins lymphomas, and other soft -tissue cancers. Sublethal exposures are suspected of suppressing the body's immune system and can severely irritate the skin and lungs.

Byproduct contaminants that result from the manufacture of penta, and which a re usually found in commercial grade product, include hexachlorobenzene (HCB) and various dioxins and furans, including hexa dioxin. Animal tests show HCB can cause liver cancer and thyroid damage. While hexa dioxin is not the most lethal dioxin (that distinction falls to 2,3,7,8-tetrachlorodibenzo-p-dioxin, or TCDD), it still has been labeled by the EPA as a potent carcinogen.

52) OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

http://www.deq.state.or.us/lq/ECSI/ecsidetail.asp?seqnbr=14

The facility encompasses approximately 105 acres, comprised of a main plant housing a pulp and paper mill, and a 2 -acre permitted solid waste landfill (the landfill was closed with DEQ approval in 1989). Effl uent from the plant's primary clarifier pond discharged to a secondary 40 -acre aeration lagoon which is part of the City of St. Helens Sewage Treatment Plant (STP).

3/19/90 JMO/SAS) Over the years, several transformers at the facility leaked oils containing PCBs. Adequate cleanup was confirmed with sampling of some of the spills. Some spill cleanups were not documented. (See DEQ preliminary assessment for more information.) There are 2 landfills on -site: one for clarifier sludge wastes (South 80 Landfill) a nd one for demolition debris. (The off -site clarifier sludge landfill has been assigned its own site number; see ECSI #4327). It is suspected that these sludges contain dioxins.

Pentachlorophenol, tetrachlorophenol and arsenic were detected in monitoring wells that surround the South 80 Landfill. Currently, mill wastewater (after sludge removal) is discharged to the City of St. Helens sewage treatment plant. From the 1920s until the early 1970s, waste was discharged into Multnomah Channel, which is connect ed to the Columbia River. Dioxins have been detected in fish near the mill (see DEQ preliminary assessment).

Primarily wastewater discharge to Multnomah Channel until 1969; PCBs from leaking transformers; pentachlorophenol and arsenic in the South 80 Demol ition Landfill

EPA-HQ-2018-000065-0001864

monitoring wells from unknown sources; overall estimated time of release: 1920s - 1987.

PCBs leaked into site soils. Pentachlorophenol and arsenic, likely from off -site sources, were discovered in monitoring wells on-site. Dioxins, PAHs and PCBs in river sediment.

53) SUPERFUND SITE, ARLINGTON, TENNESSEE

http://costperformance.org/profile.cfm?ID=13&CaseID=13

The Arlington Blending and Packaging Superfund site, located in Arlin gton, Tennessee, is a 2.3 acre site that was used for the formulation and packaging of pesticides and herbicides from 1971 to 1978. Chemicals handled at the facility included the pesticides endrin, aldrin, dieldrin, chlordane, heptachlor, lindane, methyl p arathion, and thimet as well as solvents and emulsifiers used in the formulation operations. Leaks and spills of chemicals occurred during these operations and process wastewater was discharged to drainage ditches at the site. The site was placed on the Na tional Priorities List (NPL) in July 1987. A remedial investigation (RI), begun in 1988, determined that the main areas of soil contamination at the site were located around and beneath the process buildings. The ROD, signed in 1991, specified excavation o f contaminated soil and treatment on site using thermal desorption.

Contaminants:

Pesticides and Metals

- Maximum concentrations during remedial investigation: chlordane (390 mg/kg surface and 120 mg/kg subsurface); endrin (70 mg/kg surface and 20 mg/kg su bsurface); pentachlorophenol (130 mg/kg surface and 9.5 mg/kg) subsurface; arsenic (370 mg/kg surface)

Waste Source:

Leaks and spills of pesticides during blending and packaging operations; process wastewater discharged to drainage ditches at the site

The original estimate for the soil excavation was 10,000 tons, based on the results from field-based screening using the Drexil method. Subsequent verification analyses indicated that the results from this method were not accurate. The site was recharacterized, using immunoassay sampling (results confirmed to be accurate by an off-site laboratory), and an additional 30,000 tons of soil requiring excavation were identified. The use of immunoassay sampling saved time by providing real time results (versus 5 to 6 day turnaround time for an off-site laboratory).

Total project cost was $5,586,376 including $4,356,244 in costs directly associated with the thermal treatment - Treatment costs included $4,293,893 in capital costs and $62,351 in O&M costs - The calculate d unit cost for this application was $105 per ton, based on 41,431 tons of soil treated.

54) MISSOULA'S WHITE PINE SASH SITE

http://missoulian.com/news/local/deq-conducting-new-tests-for-toxins-from-missoula-s-white/article_2e1a4e7a-539a-11e1-aa84-0019bb2963f4.html

Owen said the DEQ is testing in 11 homes in the area of Scott and Cooley streets, ambient air sources, four onsite structures and two holes dug into the ground on Scott Street. On Thursday, she and environmental scientist Ben Martich of CDM Smith captured vapors from roughly 30 feet and 15 feet below ground level.

The testing will cost at least $ 80,000, according to a DEQ estimate, and **Huttig Building Products will foot the bill. Huttig is parent to the White Pine Sash Co., a window and door manufacturing facility. From the 1930s until 1987, workers at the Northside site dipped wooden window frame s into mixtures of pentachlorophenol - or PCP** - and petroleum products. Some spilled and contaminated the site, roughly 40 acres in all near Scott and Stoddard streets, and cleanup has been taking place since 1993, according to the DEQ.

55) 6 FLORIDA PENTACHLOROPHENOL TREATMENT PLANTS

http://www.floridahealth.gov/environmental-health/hazardous-waste-sites/health-assessments.html

COLEMAN EVANS WOOD PRESERVING - Whitehouse, Duval County - Site Type: Wood treatment facility Contaminants: Chromium, copper, lead, phenol, and pentachlorophenol (PCP)

ESCAMBIA WOOD-PENSACOLA - Pensacola, Escambia County - Site Type: Former wood treatment plant Contaminants: A rsenic, benzene, dioxins/furans, pentachlorophenol (PCP), and polycyclic aromatic hydrocarbons (PAHs)

NOCATEE-HULL - Nocatee / DeSoto County - Site Type: Former creosote wood treatment site - Contaminants: Arsenic, benzene, boron, carbazole, dibenzofurans, napthalene, pentachlorophenol (PCP), and polycyclic aromatic hydrocarbons (PAHs)

PIONEER SAND CO. - Warrington, Escambia County - Site Type: Former landfill in former borrow pit - Contaminants: Antimony, beryllium, cadmium, chromium, di(2-

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ethylhexyl) phthalate, lead, and pentachlorophenol (PCP) and polychlorinated biphenyls (PCBs)

RALEIGH STREET DUMP - Tampa, Hillsborough County - Site Type: Former dump site -Contaminants: Antimony, arsenic, dieldrin, gamma chlordane, heptachlor, heptachlor/epoxide, lead, manganese, pentachlorophenol (PCP), polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and toxaphene

ST. MARKS REFINERY - St. Marks, Wakulla County - Site Type: Former crude oil refinery - Contaminants: Arsenic, dioxins/furans, manganese, mercury, and pentachlorophenol (PCP)

56) ACCEPTABLE MATERIAL FOR WOOD RECYLING

http://www.meridiancity.org/environmental.aspx?id=8467

Basically, anything that can be turned into wood chips is acceptable in the wood recycling program. There are, however, a few exceptions. Wood containing chemical preservatives, such as creosote, pentachlorophenol or copper chrome-arsenate, is not acceptable in the wood recycling program.

57) ESCAMBIA - SUPERFUND SITE – PENSACOLA, FL

ESCAMBIA WOOD TREATMENT SUPERFUND SITE – PENSACOLA, FL

http://www.horizontaldrill.com/assets/pdf/DTD-Case-History-Escambia.pdf

In the summer of 2009, DTD installed our longest horizontal well to date for groundwater remediation. The 1,450 foot long multi-screen well intersects a naphthalene plume downgradient from a source area at the Escambia Superfund site in Pensacola, Florida. **The Escambia site encompasses an old wood treatment plant that used creosote and pentachlorophenol for wood preservation**. The site has been the focus of ongoing cleanup efforts to remove or reduce soil and groundwater contamination. Black & Veatch, of Alpharetta, GA, is currently managing the site characterization and cleanup activities.

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58) KOKUBA RIVER – POSIONED BY PENTACHLOROPHENOL

https://en.wiki2.org/wiki/Kokuba_River

The Kokuba River (国場川 Kokubagawa?) is a river in Naha, Okinawa, and is the hydrographic resource for domestic urban fresh water. A number of geographical places on Okinawa bear its name, such as Lake Man Park (漫湖公園?) and Kokuba Danchi (国場団地?). The river flows into the East China Sea.

Poisoning

The river and people living around it suffered when pentachlorophenol herbicides were dumped into the river, obtained from the U.S. military by a civilian company in 1971, when it was still a US territory. Some 30,000 Okinawans had used the river for water supply, which was halted when school children came down with abdominal pain and nausea. Okinawa continues to suffer from extremely elevated levels of dioxins far beyond allowed limits, from the areas in and surrounding its US military bases, which are adjacent urban population centers, despite decades of denials and cleanup refusals by US officials.

59) TOXIC NEW ENGLAND LOG HOMES

http://theberkshireedge.com/vitos-toxic-venture-story-new-england-log-homes/

https://theberkshireedge.com/cleanup-log-homes-site-begins-landmark-bioremediation-technique/

http://theberkshireedge.com/40-million-commercial-residential-development-slated-log-homes-site/

http://www.mass.gov/ago/docs/environmental/bcntsa-great-barrington-2011.pdf

Problem was, while penta created indoor exposure for homeowners, workers who handled penta didn't fare so well, either.

A few lawsuits rolled in over the years. According to California personal injury attorney Richard Alexander, a cancer cluster in Northern California was linked by a physician to the Simpson Lumber Mill where workers applied penta to logs — through a product called Woodlife –sometimes spraying it on. Alexander successfully litigated wrongful death cases on behalf of some Simpson workers who died of rare forms of leukemia. He said he had to go after the manufacturers and sellers with a "defective product" claim, having taken fat samples from workers that revealed the chemical was present. "**It sits in fatty tissue,**" Alexander said.

There is at least one case of a homeowner suing a log home manufacturer over health problems linked to indoor exposure to penta-treated logs. Log homes treated before the ban may still be a threat to its inhabitants, especially children, who put their hands in their mouths. On Long Island, there is presently a class-action suit over penta-treated

EPA-HQ-2018-000065-0001868

utility poles leaching into private property, and two Long Island, N.Y., lawmakers have proposed a ban on continuing to use penta on utility poles. There have been mini battles across the country over newly treated poles, which are said to smell like intensified lighter fluid. One town on Long Island passed a law requiring warning labels on treated utility poles.

California personal injury attorney Richard Alexander,

http://www.alexanderinjury.com/wp-content/uploads/2012/11/toxicchem_1991_Toxic_Tort_Pentachlorophenol.pdf

A Developing Toxic Tort: Lumber Mills, Log Cabins, Leukemia, Lymphomas and Soft Tissue Sarcomas: The Case Against Pentachlorophenol

By Richard Alexander, Esq.
and Robert Bohn, Esq

Pentachlorophenol (also known as PCP or penta) has been conclusively established as a carcinogen in laboratory studies PCP exposure is linked with leukemia and immune suppression after an extremely long latency period There have been a number of PCP cases around the country and the authors are collecting interrogatory answers and depositions from a dozen PCP log cabin home cases and one case arising from the late 1960's in which a nursery of newborns was dosed with PCP via diaper detergent that killed six or seven infants In this latter case two survivors now have leukemia

Because there is a latency period of

RICHARD ALEXANDER

surviving leukemia victim who worked on the paint line and handled wood treated with PCP as a trim saw operator during the period 1971 through 1976 has experienced rashes, URI's, and nose bleeds He was diagnosed as having leukemia in 1988. Co-workers have since died of non-Hodgkins lymphoma and leukemia

The action against U.S. Plywood, Champion Papers, Roberts Consolidated Industries, Beecham Home Improvement Products, and DAP, Inc is pending and a complete report on this particular case is premature. However, research shows that few California worker's compensation lawyers have experience dealing with toxic

http://articles.chicagotribune.com/1990-07-03/news/9002230594_1_toxic-chemical-fawna-wright-loxene

LAWYERS SAY HUNDREDS EXPOSED TO DETERGENT MAY HAVE BEEN HARMED

AP , Associated Press

Jul. 3, 1990 9:23 PM ET

ST. LOUIS (AP) _ Attorneys for a woman who will get $3.75 million from a chemical company after claiming their detergent caused her leukemia say the d etergent may also have harmed hundreds of others.

Fawna Wright, 23, of Mound City, Ill., reached the settlement with BASF Wyandotte Corp., of Michigan, on Monday, the day a civil trial was to start.

Wright's 1985 lawsuit claimed her illness was linked to e xposure to toxic chemicals in Loxene, a detergent once produced by BASF and used to launder diapers and bed linens at Booth Memorial Hospital here, where she was born in 1967.

"Wyandotte continued to manufacture Loxene despite repeated warnings of its pot ential danger and continued to market it to hospitals after it had twice promised the USDA that it would not," one of Wright's lawyers, Robert Bogard, said Monday.

"Therefore, we now have hundreds of persons exposed at Booth or other hospitals using Loxe ne during the 1960s who may be suffering from problems ranging from learning disabilities to cancer, and they don't even suspect that their illnesses are linked to the diapers they wore in the hospital."

Wright, whose leukemia is in remission and who plan s to attend nursing school in the fall, said she hoped the settlement would send a message to chemical companies to be more responsible.

"I want this to reach to this chemical company and shake them up a bit, to make them realize that they are negligent,' ' she said. "I can never go back to 12 and start all over again."

Wright's lawsuit centered on two chemicals in Loxene: a pesticide known as trichlorocarbonilide, or TCC, and pentachlorophenol, a substance known as penta that is more widely used as a pesticide and wood preservative.

Despite being warned as early as 1955 that penta was unsafe because it caused skin irritations, BASF Wyandotte, then Wyandotte Chemical Corp., instructed Booth Hospital how to use Loxene in final laundry rinses to kill mildew, the lawsuit contended.

The Salvation Army, which operated the now -defunct Booth Hospital for unwed mothers, previously agreed to pay Wright $5,000, and Dow Chemical Co. settled for $60,000, Bogard said. Dow and Monsanto Co. were accused because they manufactured penta and TCC. Monsanto was dropped as a defendant.

In a statement, BASF said it "is not directly responsible for her (Wright's) condition" because the hospitals "disregarded clearly stated use instructions and warnings."

Wright became gravely ill when she was 5 days old but recovered and was later adopted, her suit says. Often ill in early childhood, at age 12 she was diagnosed with acute myelogenous leukemia, an often fatal bone marrow cancer.

Because of sealed records, her lawyers said they w ere able to trace only eight other babies born at Booth during the time the hospital used Loxene. The lawyers said those babies also became severely ill, with high fevers and profuse sweating.

Two died as infants and a third suffers from a learning disabil ity, the lawyers said. In 1966, an outbreak of illnesses attributed to Loxene at Pembina County Hospital in Cavalier, N.D., left one infant dead, they said.

Bogard said Wyandotte Chemical should have removed Loxene from the market following the North Dakota episode instead of waiting until the product's registration was revoked more than a year later.

A phenolic laundry disinfectant caused the deaths of two infants and sickened others when improperly used in a hospital laundry. It is important to be alert to the possibility of toxic reactions from chemicals in hospital laundries, particularly those used on diapers.

FATAL PHENOL POISONING FROM IMPROPERLY LAUNDERED DIAPERS

Byron W. Brown, R.S., F.A.P.H.A.

1967: Rare Deaths Due to Improper Use of Laundry Agents

- 1967, Booth Memorial Hospital, St. Louis, MO
- Infants: sweating, fever, difficulty breathing
- 2 deaths, multiple illnesses
- 2 drums of Loxene found in laundry closet
  - 22.9% chlorophenols
  - 4% triclocarban
- Analysis of blood showed phenol poisoning

http://nepis.epa.gov/Exe/ZyPDF.cgi/91012IHL.PDF?Dockey=91012IHL.PDF

60) URBAN ECOLOGY AND CONSERVATION SYMPOSIUM

http://www.fws.gov/oregonfwo/toolsforlandowners/urbanconservation/Documents/UERC%202013%20proceedings%20FINAL.pdf

Katie Bohren1 , Torrey Lindbo2 , Joseph Maser3 1 Portland State University, Environmental Science, 8054 SE Taylor Street, Portland, OR 97215; Phone: (480) 544 - 5008, Email: kebohren@uwalumni.com 2 City of Gresham, Environmental Services, 1333 NW Eastman Parkway, Gresham, OR 97030; Phone: (503) 618 - 2405, Email: torrey.lindbo@greshamoregon.gov 3 Portland State University, Environmental Science, 1719 SW 10th Ave, Portland, OR 97201; Phone: (503) 725 -8042, Email: jmaser@pdx.edu The effects of utility pole placement and characteristics on pentachlorophenol concentrations entering Underground Injection Control (UIC) devices: City of Gresham, Oregon Pentachlorophenol (PCP) is a fungicide that has been banned for general use, but is stil l used for treating wooden utility poles. PCP - treated utility poles have been linked to concentrations in urban stormwater that can exceed the Safe Drinking Water Act limit of 1 ug/L. PCP is a known carcinogen and can cause liver and kidney damage in human s over time. With the use of underground injection control (UIC) devices as an alternative method to treat and dispose of stormwater, the potential exists for groundwater contamination of PCP. In this study 60

UIC device contributing areas were surveyed fo r the presence and characteristics of utility poles in Gresham, Oregon. A positive correlation was found between utility pole surface area in a UIC contributing area and PCP concentration in stormwater. A stronger correlation exists for surface area of uti lity poles surrounded by concrete and PCP concentration in stormwater. The year of the last inspection by the electrical company could also be an indicator of PCP concentration in stormwater, as additional treatment compound is often injected into utility poles during these inspections. The intensity of the rainfall event during stormwater sample collection, in combination with these other attributes, may impact how much treatment compound is able to leach from the pole. Recommendations for future research include ongoing monitoring of PCP in stormwater and identifing utility poles surrounded by concrete that might contribute higher PCP loads to UICs. An effective solution for existing utility poles is when sidewalks are built or replaced, maintaining or add ing a soil or vegetation buffer around the utility pole. Keywords: Hydrology, Land/watershed management, Sustainable development

61) PESTICIDES: ENVIRONMENTAL IMPACTS AND MANAGEMENT

5.1. Fishes

http://cdn.intechopen.com/pdfs-wm/46083.pdf

Fishes are an important part of marine ecosystem as they interact closely with physical, biological and chemical environment. Fishes provide food source for other animals such as sea birds and marine mammals and thus fishes form an integral part of the marine food web. A lot of research has been carried out to examine the impact of pesticides on decline in fish population (Scholz et al., 2012). Pesticides have been directly linked to causing fish mortality worldwide. For example, 27 freshwater fish species are found to be affected by “plant protec - tion products” (PPP) in Europe (Ibrahim et al., 2013). **Another pesticide pentachlorophenol 198 Pesticides - Toxic Aspects (NaPCP) is reported to cause large numbers of fish m ortality in the rice fields of Surinam (Vermeer et al., 1970). Pesticides not only impact the fish but also food webs related to them.**

A study was conducted in rice fields of Surinam to examine the effects of pesticides, pentachlorophenol (NaPCP) on birds. NaPCP was sprayed for the purpose of killing Poma-cea snails. Large numbers of dead sick/dead egrets, herons and jacana birds were found during the period of pesticide application. Pentachlorophenol and endrin levels in these birds suggested that ingestion of contaminated food was the probable cause of sickness and mortality (Vermeer et al., 1970).

62) WOOD POLE MAINTENANCE

http://www.usbr.gov/power/data/fist/fist_vol_4/vol4-6.pdf

treated. In addition to rapid sterilization of the wood, a fungi-toxic residual is deposited in the cells of the wood from the gas phase. This residual is effective for an indefinite period since chemical analysis shows the residue to be principally elemental sulfur.

A-2. TREATMENT.-Use Vapam fumigant in wood poles at the time of groundline bore test inspection and as a supplemental groundline treatment. Schedule poles known to have internal decay or that have white wood showing near groundline for treatment before they have decayed to the point where replacing them is necessary.

A-3. EQUIPMENT AND MATERIALS.-

(1) A 9/16-inch wood auger.

(2) Vapam in 1-pint bottles.

(3) Treated wood filler plugs (5/8 by 6 inches).

(4.) Safety goggles.

A-4. PROCEDURE.-

(1) If the pole is inspected with a sonic pole tester and no low readings are recorded and no evidence of wood-destroying insects is noticed, do not bore that pole and, hence, do not use the Vapam.

(2) In poles with either decay pockets or insects, bore a hole in each quarter at groundline and one hole 2 feet above groundline, preferably above the decay pocket.

a closed vehicle.

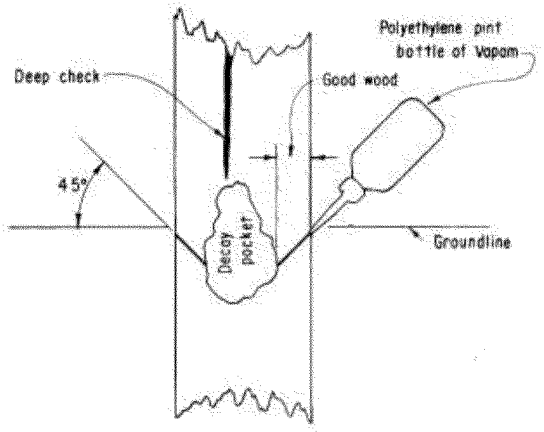

Figure A-1. Applying Vapam treatment.

63) IMPLICATIONS OF GLOBAL CLIMATE CHANGE

In active organisms such as fishes, metal exposure can lead to behavioral selection of a lower preferred temperature (if given a choice) (Gordon 2005). Thus, Cd and Cu exposure resulted in a decrease in the selected water temperature in Atlantic salmon Salmo salar, whe reas Zn had no effect (Peterson 1976, cited according to Gordon 2005). Interestingly, respiratory poisons and metabolic uncouplers have the same effect on preferred temperatures, suggesting that interference with aerobic metabolism

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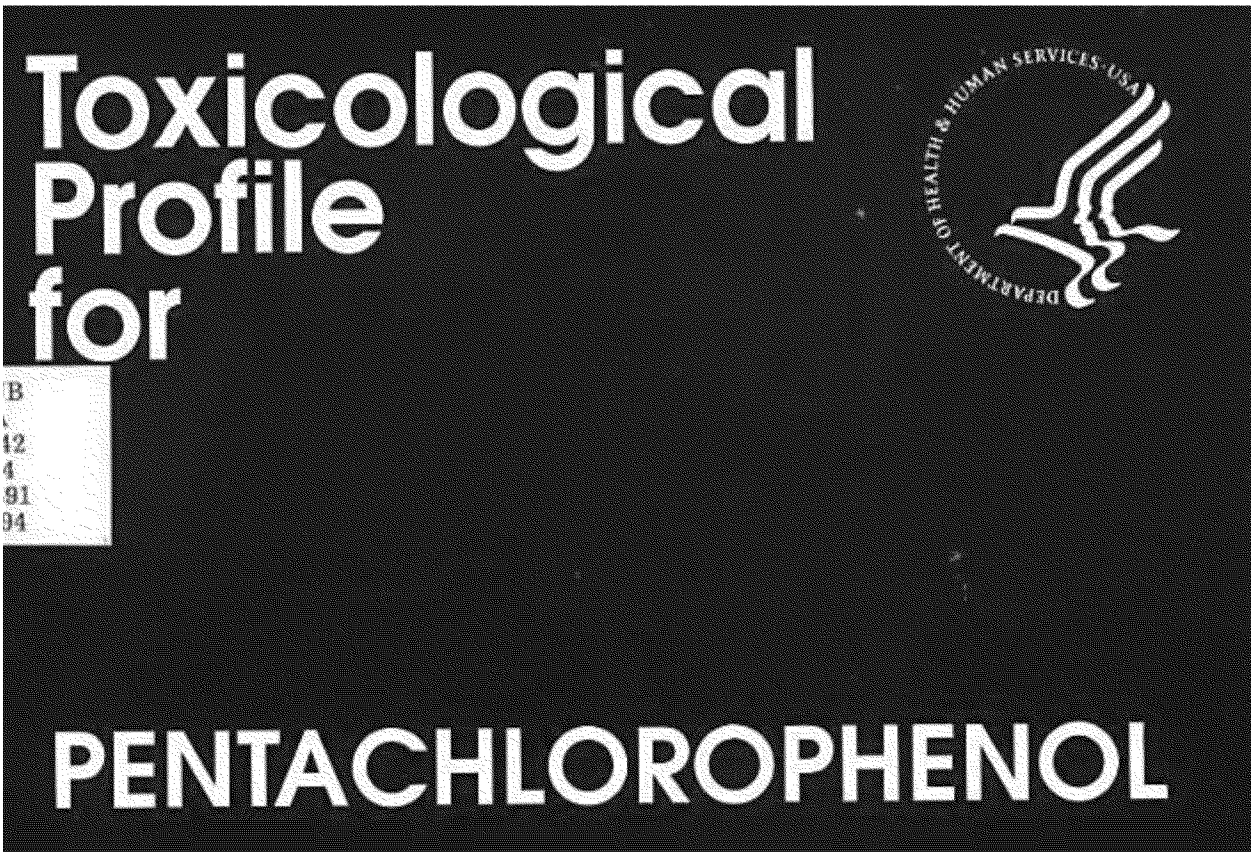
underlies these effects. Thus, the mitochondrial uncoupler pentachlorophenol and an inhibitor of cytochrome c oxidase, potassium cyanide , decreased preferred temperature in S. salar, although 2,4 -dinitrophenol had no effect on preferred temperature, despite uncoupling of mitochon dria (Javaid 1972, Peterson 1976). In the toad Buffo marinus, injections of sodium azide or cyanide also led to a behavioral selection of a lower preferred temperature (Branco & Malvin 1996), as did exposure of protozoans Paramecium caudatum to sodium azid e, cyanide, or 2,4 -dinitrophenol (Malvin et al. 1994, Malvin 1998).

64) TOXICOLOGY PROFILE FOR PENTACHLOROPHENOL

TOXICOLOGY PROFILE FOR PENTACHLOROPHENOL



65) HTTP://WWW.GOOGLE.COM/PATENTS/US3070494

We have f ound unexpectedly that sodium pentachlorophenate can be used with the foregoing salts, such as alkali metal fluoride, chromates, and arsenates, to provide an excellent non -staining, non -sludging preservative for wood. Although sodium pentachlorophenate is a colorless, water -soluble salt with high toxicity to fungi, it had

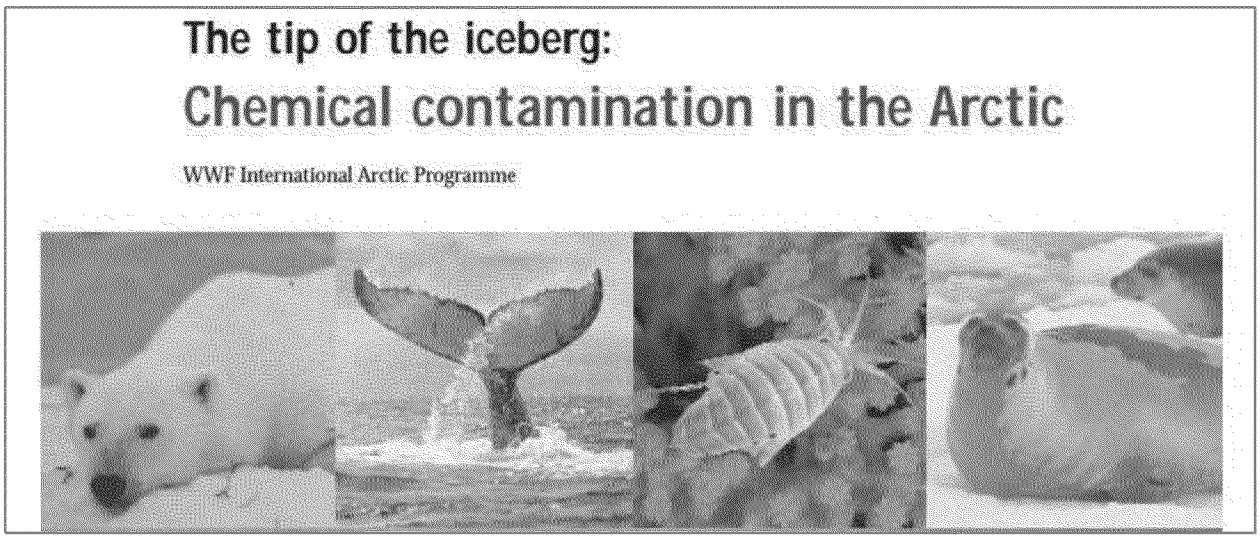
not been heretofore used for the impregnation of wood because the acidic nature of the wood causes precipitation of pentachlorophenol when the pH of the sodium pentachlorophenate solution falls slightly below 7 for technical grade material. After it is introduced into the wood, the pentachlorophenate is changed back to pentachlorophenol by the acidity of the wood and possibly through reaction with carbon dioxide. Because of the precipitatio n **due to the acidity of the wood, the pentachlorophenate generally does not penetrate the wood deeply. While the material does afiord some protection from decay, the protection is less satisfactory than that protection which can be obtained with oil soluti ons of chlorinated phenol .** The use of aqueous solutions of sodium pentachlorophenate therefore has been heretofore limited to the dipping of green lumber in a solution of the pentachlorophenate to prevent blue staining during seasoning.

66) CHEMICAL CONTAMINATION IN THE ARCTIC

http://www.iisd.ca/linkages-update/44/

THE TIP OF THE ICEBERG: CHEMICAL CONTAMINATION IN THE ARCTIC

(WWF, February 2005) WWF has released a new report highlighting increases in chemical contamination in the Arctic environment. The report analyzes the levels of industrial and agricultural contaminants in the Arctic, co nsidering toxic substances such as polychlorinated napthalenes (PCNs), brominated flame retardants (BFRs), perfluorooctanesulfonate (PFOS), hexachlorobenzene (HCB), short-chained chlorinated paraffins (SCCPs), and pentachlorophenol (PCP). The report presen ts evidence that chemical contamination is increasing exponentially in arctic marine mammals and bird species, and that these increases can be expected to continue. It argues that precautionary chemicals legislation, such as the EU's REACH proposal, is nec essary to address these contamination problems.



67) PENTACHLOROPHENOL IS WORLD'S WORST CHEMICALS

http://www.pananz.net/uncategorized/unexpertcommitteetakesaction/

UN Expert Committee: Pentachlorophenol is one of the world's worst chemicals. Agrees to incorporate climate change impacts in toxic chemical evaluation.

68) ENVIRONMENTAL HEALTH - PENTACHLOROPHENOL

http://www.inchem.org/documents/ehc/ehc/ehc71.htm

A recent case, in Canada, of the mortality of young pigs kept on a PCP -treated wooden floor was reported by Ryan (1983). Although PCP residues of 310 µg/litre were found in sow's milk samples, no PCP could be detec ted in the liver and stomach of the young pigs. However, µg/kg concentrations of the higher chlorinated dioxins were found in the skin and liver of the young pigs, and Ryan (1983) concluded from these findings that these impurities were responsible for their deaths. Pesticide poisonings of livestock in the United Kingdom have been reviewed by Quick (1982) for the period 1977 -80. Of 38 suspected PCP poisoning incidents, only 9 were confirmed as PCP intoxications. High PCP levels found in wood shavings and sawdust, used as bedding or litter for cats and poultry, apparently caused the death of animals. Quick (1982) suspected that impurities present in the commercial PCP products could have been partly responsible for the deaths.

In contrast to the lower chlorinated phenols, PCP does not cause convulsions. Ataxia, mental and physical fatigue, headaches, dizziness, disorientation, anorexia, nausea, vomiting, dyspnoea, hyperpyrexia, tachycardia, and a rise in metabolic rate are common signs and symptoms of PCP poisoning. Most prominent are extreme weakness, elevated body temperature, and profuse sweating. Death is due to cardiac arrest and poison victims usually show a marked rigor mortis (Truhaut et al., 1952a,b; Nomura, 1954; Mason et al., 1965; Robson et al., 1969; Watanabe & Watanabe, 1970).

69) BIOLOGICAL EFFECTS IN OSPREY CHICKS

http://fresc.usgs.gov/products/papers/900_henny.pdf

We found the highest concentrations of OCDD and otherhigh er chlorinated PCDDs and PCDFs in eggs from theThompson River, which is also consistent with monitoring data[1]. As in the previous study, yolk sacs with higher concentrations of HpCDD and OCDD also contained 1,2,4,6,8,9 - HxCDF and 1,2,4,6,8 -PnCDF, which a re considered to be indicative of pentachlorophenol sources. **Noteworthy are the substantial concentrations of OCDD and HpCDD in yolk sacs of ospreys from the Nechako River**, which are consistent with findings in eggs collected at that site in 1992 and

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which, together with the presence of 1,2,4,6,8,9 -HxCDF and 1,2,4,6,8 - PnCDF, are indicative of local chlorophenol sources, **probably from sawmills in the Vanderhoof area [1].**

70) CHLORINATED DIOXINS IMPLICATED IN MORTALITY PIGS

http://www.researchgate.net/publication/6400914_Higher_Chlorinated_Dioxins_Implicated_in_the_Mortality_of_Young_Pigs_Kept_on_a_Pentachlorophenol-treated_Wooden_Floor

Higher Chlorinated Dioxins Implicated in the Mortality of Young Pigs Kept on a Pentachlorophenol-treated Wooden Floor.

Higher Chlorinated Dioxins Implicated in the Mortality of Young Pigs Kept on a Pentachlorophenol- treated Wooden Floor

J. J. RYAN

Food Division, Health Protection Branch, Health and Welfare Canada, Tunney's Pasture, Ottawa, Ontario K1A 0L2

SUMMARY

Young pigs raised on a pentachlorophenol-treated wooden floor showed a high mortality. The deaths ceased when the original treated wood was covered with untreated plywood. Analysis of the wood, mother's milk, and young pig tissues was carried out for pentachlorophenol and chlorinated dibenzo-*p*-dioxins. Pentachlorophenol was found in the wood and mother's milk but not in the young pig

nol, contrairement aux tissus des porcelets. On décela aussi de fortes concentrations de dioxines hautement saturées en chlore dans le bois et de faibles concentrations dans le lait de la truie; la peau et le foie des porcelets en contenaient cependant davantage. Une comparaison de la concentration des isomères des hexa-et des hepta-dioxines, dans le bois ainsi que dans la peau et le foie des porcelets, révéla qu'une absorption et/ou un métabo-

nated wooden buildings had reproductive problems and low milk yields (8). Their tissues contained low parts per billion (ppb) concentrations of the higher chlorinated dioxins (12). The presence of contaminants in the tissues of food producing animals is particularly disturbing since the residues can readily be passed on to humans. The purpose of this paper is to describe analytical results of a case history implicating higher chlorinated dioxins

saturées en chlore, dans la mortalité de porcelets gardés sur un plancher de bois traité au pentachlorophénol

Des porcelets gardés sur un plancher de bois traité au pentachlorophénol affichèrent un taux élevé de mortalité. Ils cessèrent toutefois de mourir, dès qu'on eut recouvert le plancher avec du contre-plaqué intact. On effectua une analyse du bois, du lait d'une truie et de certains tissus des porcelets, dans le but de démontrer la présence de pentachlorophénol et de dibenzo-*p*-dioxines chlorées. Le bois et le lait de la truie recelaient du pentachlorophé-

to be the toxic contaminant (9-10). Recently, a more insidious type of toxicosis has been uncovered (11-12) in farm animals raised in contact with bedding or wood which contained chlorinated dibenzo-*p*-dioxins (dioxins) and chlorinated dibenzofurans (furans). Chickens raised on wood shavings containing dioxins and furans have shown an increase in the occurrence of liver fibrosis and morbidity. The livers contained readily measureable amounts of higher chlorinated dioxins (11). Michigan dairy cattle raised in contact with contami-

Samples of the treated wood, sow's milk, and tissues from two piglets (liver, brain, kidney, serum, stomach content (piglet 1 only), and skin (piglet 1 only) were collected. The wood, milk, livers and the single stomach contents were analyzed for PCP by the Ontario Ministry of Agriculture and Food's Veterinary Services Laboratory, Guelph, Ontario. The method was based on gas chromatography (GC) with electron capture (EC) detection of the acetate derivative (13). Some samples were sent also to the Health Protection Branch laborato-

Site Register

WASHINGTON STATE DEPARTMENT OF ECOLOGY TOXICS CLEANUP PROGRAM

DEPARTMENT OF ECOLOGY State of Washington

MAY 19, 2011

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FORMAL CLEANUPS

Ecology oversees complex cleanup sites to ensure that your health and that of the environment are protected.

CLARK COUNTY

https://fortress.wa.gov/ecy/publications/publications/1109041h.pdf

From 1964 to 1993, Pacific Wood Treating operated on the site. The company pressure-treated wood products with oil -based treatment solutions containing creosote, pentachlorophenol (PCP), and a water -based mixture of copper, chromium and arsenic. In 1993, the company declared bankruptcy.

71) WOOD TREATING PLANS AND THEIR CLEANUP
https://www.princeton.edu/~ota/disk1/1995/9509/950904.PDF

Wood-Treating Sites and Their Cleanup 2

The wood-preserving industry treats lumber with various chemicals to protect against insect damage and decay. Chemically preserved wood is used in products for outdoor use such as railway ties, fencing, telephone poles, exterior plywood panels, and outdoor decks (23). The industry has operated in the United States for over 100 years, with sites often having operated for decades (23). Spills from the treatment process have left many of these sites heavily contaminated with the chemicals used to preserve wood.

U.S. Environmental Protection Agency (EPA) has identified 56 wood-treating sites among the Superfund sites in the United States (17). Because the processes that have been used at these wood-treating sites are generally so similar, the contamination and cleanup needs are also similar. Recognizing this, EPA has recently moved to standardize the process for selecting

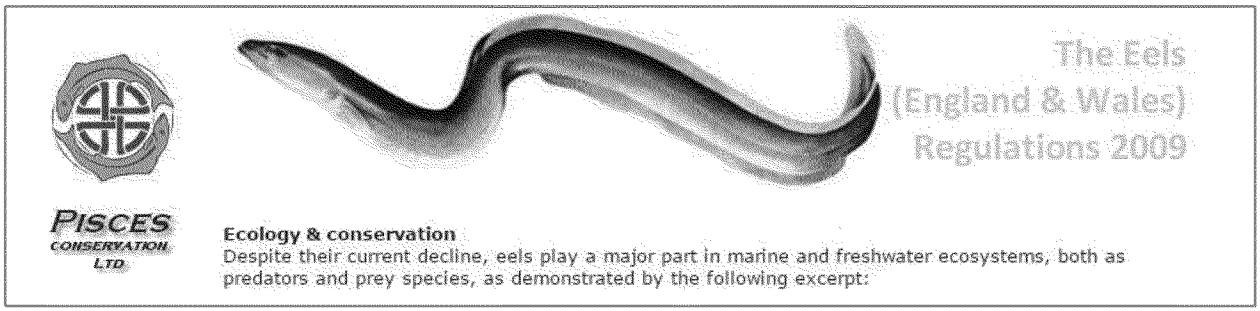
Wood-treating sites are one of three categories of sites for which EPA has designated presumptive remedies.

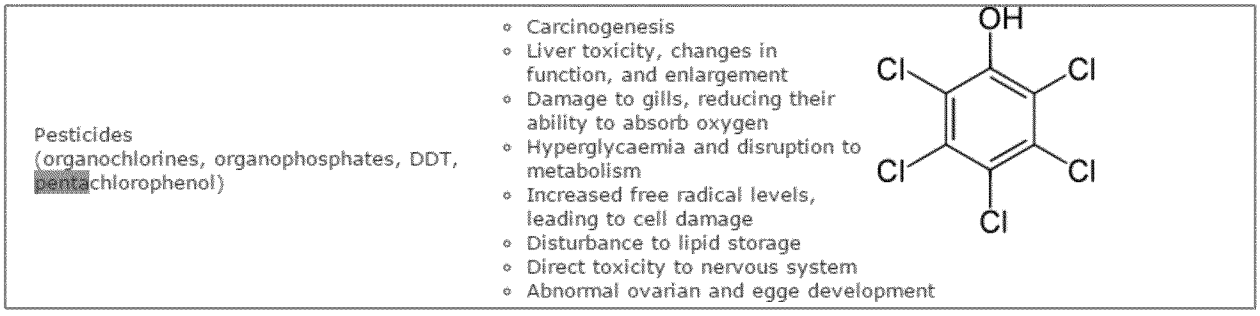
For sites contaminated with preservatives such as those used at the Texarkana Wood Preserving site, EPA suggests bioremediation as the preferred cleanup remedy. If bioremediation is found to be infeasible, thermal desorption methods are to be considered. Incineration may be selected if bioremediation and thermal desorption are not feasible. In downplaying the role of incineration among the presumptive remedies, EPA stresses the difficulty in gaining public support, but recognizes the method's effectiveness.

In addition to the technologies that EPA now identifies as presumptive remedies, a number of other innovative technologies have been selected for use at wood-treating sites in recent years. OTA has reviewed 47 records of decision

72) THE EELS AND PENTACHLOROPHENOL POSION

http://www.eelregulations.co.uk/cont-009.html





73) MUTIPLE CALIFONIA TOXIC PENTACHLOROPHENOL CLEANUP

http://www.swrcb.ca.gov/gama/docs/ab2021_fy0910.pdf

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Humboldt	U.S. Forest Service Nursery, McKinleyville	Chlorothalonil	Cleanup complete.
	Sierra Pacific, Arcata	Pentachlorophenol, Tetrachlorophenol,	Ongoing contamination cleanup.
	Carlotta Lumber Company	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination cleanup.
	Beaver Lumber Company, Arcata	Pentachlorophenol, Tetrachlorophenol	Cleanup complete.
	Sun Valley Bulb Farms	Chlorothalonil, Dithiocarbamate	Ongoing monitoring and assessment to prevent discharges to surface water and ground water under RWQCB direction.
	Pacific Lumber Co., Carlotta	Pentachlorophenol. Tetrachlorophenol	Ongoing contamination cleanup.
	Schmidbauer, Arcata	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination cleanup.
	Schmidbauer, Eureka	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Simpson Plywood Mill (Old), Eureka	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Simpson Mill, Samoa	Pentachlorophenol, Tetrachlorophenol	Cleanup complete.
Siskiyou	Hi-Ridge Lumber Company	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Pine Mountain Lumber Company	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination assessment and cleanup.
	Morgan Door, Roseburg	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination cleanup.
	J.H. Baxter	Pentachlorophenol, Tetrachlorophenol	Ongoing contamination cleanup.

COUNTY	SITE	PESTICIDE	PREVENTION ACTION
Alameda	AmChem/ Henkel Surface Technologies n/c in08	Chlordane, Heptachlor	RWQCB oversight. Impacted soil removed in 2006 and 2007. Groundwater no longer impacted, but may require long-term monitoring after removal of cap/redevelopment.
	Jones-Hamilton	Pentachlorophenol (PCP), Tetrachlorophenol (TCP)	RWQCB Final Site Cleanup Requirements Order No. 2001-0054 adopted specified time schedule for final remedial actions. Ongoing groundwater monitoring for VOCs, PCP & TCP.
	Port of Oakland (Embarcadero Cove)	Chlordane, Pentachlorophenol, DDT, Endosulfan, 2,3,7,8-TCDD, DDD	Department of Toxic Substances Control (DTSC) has lead and has approved a Remedial Action Plan including continuous ground water monitoring.
	Peerless Southern Pacific Railroad	Pentachlorophenol	City of Berkeley Health Department has lead. Additional soil and ground water investigations required.
	FMC, Newark	EDB	RWQCB Final Site Cleanup Requirements Order No. 2002-0060 adopted. Ongoing groundwater monitoring for VOCs, specified time schedule for final cleanup actions. Ground water cleanup underway.
	[illegible]	[illegible]	[illegible] alternative in preparation.
	Eagle Field (FUDS)	2,4-D, Pentachlorophenol,	Pesticides detected from groundwater grab samples. Additional assessment is needed.
	Broadview		

Butte	L.P, Remanufacturing Facility, Chico	Pentachlorophenol Tetrachlorophenol	DTSC is lead agency. The approved Final Remedial Action Plan included, in part, extracting pentachlorophenol-contaminated groundwater from four extraction wells, treating the water using granular activated carbon, and reinjecting the treated water to a dry well. Groundwater cleanup completed in 2003. Treatment system dismantled, dry well destroyed, and Waste Discharge Requirements rescinded in March 2008. Land use restricted. Groundwater monitoring continues.
Butte	Former Butte County Mosquito and Vector Abetment District, Chico	DDT, DDE, DDD, Endrin, Endrin Ketone, Heptachlor, α-Chlordane, γ-Chlordane	Pesticides detected in former septic tank and adjacent soils during excavation. Due to shallow local water table, on 19 November 2010 Butte County Environmental Health Division referred the case to the Central Valley Water Board. Preliminary site investigation is pending.
Shasta	Former Branstetter Mill Site, Redding	Pentachlorophenol	Pesticides associated with former dip tank. Residential development planned. Initial investigation identified potential human health concerns. In February 2008, case referred to DTSC who has entered into a voluntary cleanup agreement with RP, further assessment planned.
Tehama	Louisiana-Pacific, Former VG Mill & Jamb, Red Bluff	Pentachlorophenol Tetrachlorophenol Stoddard Solvent	CAO Order 98-712. On-going groundwater monitoring and assessment. Groundwater remediation by extraction, carbon filtration, and re-injection proposed to reduce pollutant source and promote biodegradation.

74) SUPERFUND SITE, BRUNSWICK, GA.

EPA Public Availability Session to be held for the Terry Creek Superfund Site, Brunswick, Ga.

FOR IMMEDIATE RELEASE:

Dec. 3, 2015

EPA Public Availability Session to be held for the Terry Creek Operable Unit 1 Superfund Site, Brunswick, Ga.

Contact Information: Dawn Harris Young, (404) 562 -8421 (Direct), (404) 562 -8400 (Main), harris-young.dawn@epa.gov

ATLANTA – The U.S. Environmental Protection Agency (EPA) will hold a Public Availability Session from 3:00 p.m. to 8:00 p.m. on Tuesday, December 8, 2015 at Brunswick Historic City Hall on 1229 Newcastle Street in Downtown Brunswick, Ga. Representatives from EPA and the Georgia Environmental Protection Division (GA EPD) will be available to answer questions and discuss cleanup of Operable Unit 1 at the Terry Creek Superfund Site.

The Terry Creek Dredge Spoil Areas/Hercules Outfall si te is located in Brunswick, Georgia. It includes the area where the **Hercules Brunswick pesticide production facility discharged wastewater through an outfall ditch into Dupree Creek,** which flows into Terry Creek, from 1948 to 1980. The site also includes n earby areas used to

store sediments dredged from Dupree Creek and Terry Creek. EPA proposed placing the site on the Superfund program's National Priorities List in 1997 because of contaminated groundwater, soil, sediment and fish tissue.

EPA, the GA EPD an d Hercules, Inc., the site's potentially responsible party (PRP), have investigated site conditions and taken steps to clean up the site in order to protect people and the environment from contamination. A fish consumption advisory remains in place for par ts of Dupree Creek and Terry Creek. By investigating and cleaning up the site, EPA, GA EPD and the site's PRP continue to protect people and the environment from site contamination

Community members interested in obtaining additional information are encour aged to contact Angela Miller, EPA Community Involvement Coordinator, at (877) 718 -3752 or 404-562-8561.

Brunswick Wood Preserving Superfund Site

Floods Floraville Neighborhood

http://glynnenvironmental.org/oldsite/BWP-10-05.htm

In October of 2005 the contaminated ponds and impoundments at Brunswick Wood Preserving Superfund Site overflowed and flooded the Floraville Lane neighborhood. Unlike other areas in Glynn County that experienced f looding during the first week of October, the water that flowed from **Brunswick Wood Preserving were covered with diesel fuel and pentachlorophenol.**

The GEC Project Manager spoke with residents the morning of October 8th and learned that besides contamin ated water in homes, well water had turned an ominous yellow color. **The Georgia Emergency Response Team** was called and the problem was reported. Calls were received at a rapid pace from the Georgia Environmental Protection Division duty officer for the d ay, the United States Coastguard, and several branches of the EPA.

After calls between state and federal agencies, the EPA Emergency Response Branch was assigned to respond. David Dorian arrived less than 24 hours later on October 8th, assessed the s ituation and took a tour of the Superfund Site. Persistent flooding prevented all areas of the Site from being inspected. Of particular concern was the berm surrounding the **4 acre pond of creosote, copper chromium arsenate, and pentachlorophenol at the east end of the Site.**

Most of the floodwaters had subsided by the time Mr. Dorian had arrived and the sheen was much less visible. Several people living on Floraville Lane recounted the flood and how the first floodwaters had a thick layer of oil, and how the sheen thinned as the floodwaters flowed through the neighborhood. But the immediate concern was

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regarding that yellow water coming from their wells. Bottled water was provided by the EPA as an interim measure until the wells could be tested and results obtained.

Mr. Dorian came by the GEC office to review earlier residential water data and to further assess what action needed to be taken while he was here. Past sampling indicated that the next round of well sampling was due soon, and would bett er define the extent of any well contamination.

The rapid response and decisive action of David Dorian from the EPA Emergency Response Branch was in stark contrast to the EPA Remedial Branch's follow -up. The samplers from the EPA Athens, Georgia Laborat ory moseyed into town six days later, only sampled two wells, and had no idea when the sampling results would be available to the residents. In fairness to those from the EPA Laboratory who sampled the wells, they said that only two days ago did they learn that they would need to get to Brunswick to sample in response to the emergency situation.

Tim Simpson from the EPA Environmental Services Laboratory in Athens, Georgia, taking residential water well samples on October 17th. Photo by Daniel Parshley

The Brunswick Wood Preserving Superfund Site is scheduled for a full round of residential and onsite monitoring well sampling in November 2005. Unfortunately, this might be too late to document impacts to surrounding residential wells during heavy rain events which will certainly come again in the future.

Even though we do not like to see our friends and neighbors flooded by contaminated water from a Superfund Site, hopefully this tragedy will stimulate the EPA to stop telling the media that Brunswick Wood Preserving is not a threat to those living around the Site. What they report within the EPA is much different, including the following concerns:

- Dioxin contamination in Burnett Creek and free product continues to discharge
- Potential impacts to 6 municipal wells within 4 miles serving 6000 people
- Several private wells near site
- Turtle, duck carcasses observed in ponds
- Deer observed on site (carcass reported)
- Children swim and fish in creek
- Large ponds are an imminent threat to human health and environment
- Fences are not an adequate long-term solution
- Site is attractive to trespassers, ATVs, and children fishing

The EPA has since completed analysis of the residential well samples and Brian Farrier, EPA Remedial Project Manage r, reports, “The only detections we had were

EPA-HQ-2018-000065-0001884

barium and copper, at levels consistent with past sampling in the area, for these naturally occurring compounds, i.e. the wells were not affected by the ponds. However, I do not know what the State's results we re for their Fecal Coliform tests; these wells should not be used until we know those results."

https://d10k7k7mywg42z.cloudfront.net/assets/5304c82ad6af68126400001d/Experience_Working_with_Community_Groups.pdf

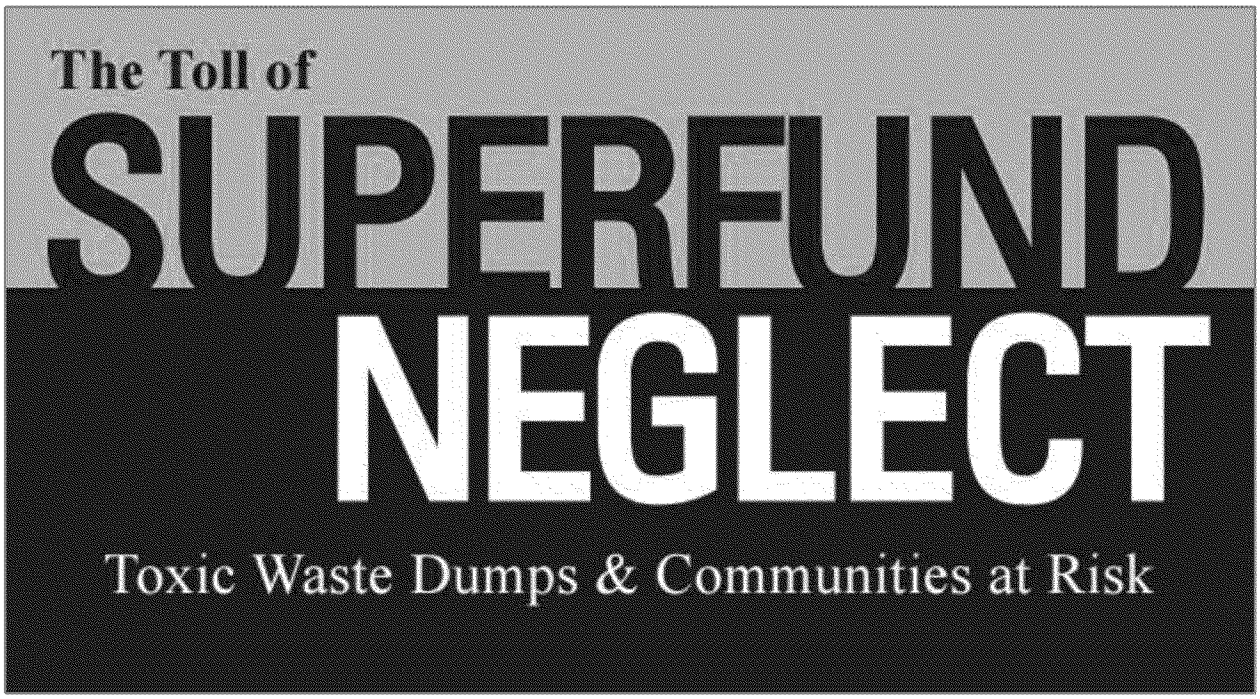
Environmental Stewardship Concepts, LLC

Experience Working with Community Groups
Environmental Stewardship Concepts, LLC
Dr. Peter L. deFur, President
January 2014

Presently technical advisor for:

Brunswick Wood Preserving Superfund Site, LCP Chemical Site and Terry Creek site (Hercules Chemical plant): Brunswick, GA
ESC serves as technical advisor on these three sites for the Glynn Environmental Coalition. Site contaminants include mercury, PAHs, PCBs, creosote, pentachlorophenol, and copper chromium arsenate and other chemicals.

http://www.progressivereform.org/articles/Superfund_061506.pdf



75) PENTACHLOROPHENOL IN DRINKING-WATER

http://www.who.int/water_sanitation_health/dwq/chemicals/pentachlorophenol.pdf

Pentachlorophenol in Drinking -water Background document for developm ent of WHO Guidelines for Drinking-water Quality

76) GEORGIA RESOLUTION

http://www.legis.ga.gov/Legislation/20092010/87843.pdf

09 LC 35 1122

House Resolution 177

By: Representatives Long of the 61st, Davis of the 109th, Jordan of the 77th, Davis of the 122nd, Bruce of the 64th, and others

A RESOLUTION

1 Creating the House Study Committee on the Airborne Release of Pentachlorophenol and its
2 Effects on the Health of Georgia Residents; and for other purposes.

3 WHEREAS, pentachlorophenol is devastating to human health and the environment and has
4 been classified by the Environmental Protection Agency as a carcinogen (B2 cancer causing
5 substance) that includes tumors, Hodgkin's disease, soft tissue sarcoma, and acute leukemia;
6 and

EPA-HQ-2018-000065-0001886

77) PENTACHLOROPHENOL CONTAMINATION OF PRIVATE DRINKING WATER FROM TREATED UTILITY POLES

Lee Karlsson, MScPH, Lori Cragin, PhD, MS, Gail Center, BS, Cary Giguere, BS, Jeff Comstock, BS, Linda Boccuzzo, MS, and Austin Sumner, MD, MPH

Author information ▶ Article notes ▶ Copyright and License information ▶

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3558766/

Abstract

Pentachlorophenol (PCP) is an organochlorine wood preservative used to treat utility poles in the United States. It is applied to pine poles by vacuum pressure treatment at a manufacturing facility with binding agents from hydrocarbons, including diesel fuel and kerosene. About 36 million PCP-treated poles are in service across the United States (60% of the total 60 million treated utility poles).1

The US Environmental Protection Agency (EPA) maximum contaminant level (MCL) for PCP in drinking water is 0.001 milligrams per liter.2 The odor threshold for PCP in water is 0.857 milligrams per liter at 30°C (86°F).3 A PCP concentration in drinking water could be above the MCL but below the odor threshold, thus the odor property is not necessarily protective.

PCP is absorbed by oral, dermal, and inhalation routes.4 It does not build up in the body, and its elimination half-life is 33 hours, primarily in urine.4 Dose, duration of exposure, individual traits, and presence of other contaminants influence health effects.5 Effects of PCP exposure can range from skin, eye, and respiratory irritation; hepatotoxicity, including elevation of serum alkaline phosphatase, aspartate aminotransferase, and lactate dehydrogenase; kidney toxicity, including albuminuria, glycosuria, aminoaciduria, and elevated blood urea nitrogen; to impaired oxidative phosphorylation and hyperthermia, which can result in death.6,7 PCP is classified by the EPA as likely to be carcinogenic to humans.8

78) THE LAW – "SOLID WAIST" OR NOT ?

http://www.mitchellwilliamslaw.com/files/1302634860DOC041211.pdf

http://www.ettdefenseinsight.com/2011/05/court-rejects-toxic-telephone-pole-lawsuit/

PART 430—THE PULP, PAPER, AND PAPERBOARD POINT SOURCE CATEGORY

http://www.ecfr.gov/cgi-bin/text-idx?SID=6c0f3be6467b6241b1f8d454d64eefdf&node=pt40.30.430&rgn=div5

79) ALSTEEN V WAULECO, INC.-

Alsteen v Wauleco, Inc. Wausau's River Street neighborhood Wisconsin

http://judicialview.com/State-Cases/wisconsin/Product_Liability/Alsteen-v-Wauleco-Inc./37/32503

http://www.masstortdefense.com/2011/06/articles/state-appeals-court-rejects-medical-monitoring/

https://www.wicourts.gov/ca/opinion/DisplayDocument.pdf?content=pdf&seqNo=65827

The following facts are alleged in the fourth amended complaint. From about 1940 to 1987, the Crestline window factory operated at 910 Cleveland Avenue, which is located in Wausau's River Street neighborhood. Wauleco, the current owner of the Crestline site, is the corporate successor to the Crestline Millwork Company and is a subsidiary of Sentry Insurance. ¶4 From approximately 1946 to 1986, operations at the Crestline site included treatment of wood products with a preservative called "Penta." Penta contains hazardous chemicals, including dioxins, pentachlorophenol, and benzene. These chemicals are known to be harmful to human health and are classified as possible carcinogens. They are capable of causing both cancerous and noncancerous diseases when ingested, inhaled, or absorbed through the skin. ¶5 Over a forty -year period, Penta was routinely spilled and discharged into the environment at the Crestline site. The Penta migrated into the River Street neighborhood. As a result, the air, soil, surface water, and groundwater in the River Street neighborhood became contaminated with dangerous levels of hazardous chemicals. Current and former residents of the neighborhood have ingested, inhaled, and absorbed these chemicals. ¶6 In May 2008, six neighborhood residents sued Wauleco, alleging personal injury and property damage caused by the release of Penta from the Crestline site. By the time the fourth amended complaint was filed in Nove mber 2009, the lawsuit included over 140 plaintiffs, each of whom had lived in or visited the River Street neighborhood at various times since 1939. These plaintiffs fell into three groups. One group alleged their exposure to Penta had caused them to devel op various health problems, including Hodgkin's lymphoma, no Hodgkin's lymphoma, breast cancer, liver cancer, brain

cancer, stomach cancer, thyroid cancer, diabetes, thyroid disease, and neurological problems. Another group alleged Wauleco's release of Pen ta had damaged their property. Alsteen is a member of the third group of plaintiffs, whose claims are the subject of this appeal. This third group did not allege any current adverse health effects caused by their exposure to Penta. Instead, they alleged th eir exposure to Penta "significantly increased their risk of contracting cancer" at some point in the future. As damages, they sought "future expenses related to medical monitoring." ¶7 Wauleco moved to dismiss Alsteen's claims. Wauleco argued that Wisconsin law requires a plaintiff to allege actual injury in order to state a tort claim. Because Alsteen had only alleged an increased risk of future harm, Wauleco contended she had not alleged any actual injury. Accordingly, Wauleco argued Alsteen's medical mo nitoring claim was not recognized under Wisconsin law. The circuit court granted Wauleco's motion, concluding Alsteen had failed to state a claim. Alsteen now appeals.

https://www.mtu.edu/forest/alumni/yearbooks/pdfs/1977.pdf

Modern Trends In Wood Preservation

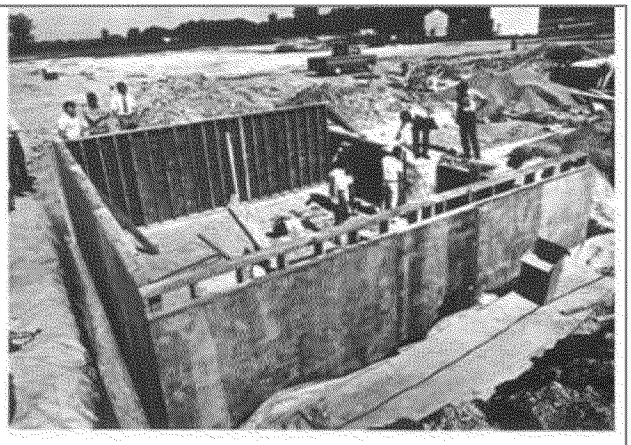
by Darrel D. Nicholas

Because of the need for conservation of our natural resources and the desirability of reducing maintenance costs, wood preservation is becoming increasingly important. In view of this, a brief review of recent developments in one general area of wood science would be timely.

Wood Preservatives

Since most wood preservatives are classified as toxic chemicals, their use must be reviewed by governmental agencies. An example of such a preservative substance is arsenic, which is currently being reviewed by OSHA.

Other preservative chemicals such as pentachlorophenol, creosote and chromium are also being reviewed by OSHA and EPA; however, the full impact of these evaluations on the wood preserving industry will not be known for some time.



From the economic standpoint, fumigant preservative systems should pay rich dividends in the future.

Research is also being conducted to find alternate methods for preserving wood. Such methods are desirable because all wood preservatives currently being used in the United States are toxic in nature and to a certain degree hazardous. It appears that work currently being conducted at the U.S. Forest Products Laboratory may ultimately lead to such method.

The basic approach being investigated involves modifying wood by various chemical reactions with

80) NEW YORK TIMES 1984 – 1 BILLION POUND OF CHEMICALS

http://www.nytimes.com/1984/07/12/us/epa-to-limit-the-sale-of-3-wood-preservatives.html

E.P.A. TO LIMIT THE SALE OF 3 WOOD PRESERVATIVES

By PHILIP SHABECOFF
Published: July 12, 1984

•

WASHINGTON, July 11— The Environmental Protection Agency announced today that it would restrict the sale of three widel y used wood preservatives that have caused cancer and other illness in test animals.

The agency said it would permit sales of creosote, pentachlorophenol and inorganic arsenic compounds called arsenicals only to workers trained and certified as qualified to use them. The chemicals are used to protect lumber and products such as lawn furntiture, sun decks, utility poles, fence posts and railroad ties. Limitations on Sales

When the rules go into effect next February, unless one or more companies file objections, an uncertified person would no longer be able to go to a hardware store and purchase, say, a can of wood stain containing pentachlorophenol. To become certified, according to an agency official, a worker or consumer would have to take training in the safe use of the substances and pass a Government test of proper procedures.

Some popular wood preservatives used by homeowners, including Penta Ready to Use and some items in the Woodlife line made by Roberts Consolidated Inc., contain these preservatives. Some other popular preservatives, including the Darwarth Company's Cuprinol, do not use any of the three compounds.

The agency's action, taken under the Federal Insecticide Rodenticide and Fungicide Act, represents an unusual regulatory intrusion into the private market by the Reagan Administration, which has made deregulation a major element of its economic policy.

The agency did not ban the three preservatives because, according to John A. Moore, Assistant Administrator for Pesticides and Toxic Substances , "E.P.A. has decided that the benefits of these compounds outweigh the risks associated with their use." Large Portion of the Market

EPA-HQ-2018-000065-0001890

About one billion pounds of the three compounds are used in this country in a year. They account for 97 percent of the w ood preservatives in use and more than a third of all pesticides used in the United States.

Consumers will still be able to purchase most wood products treated with these preservatives after the rules go into effect. But the industry will be required to pa rticipate in a "consumer awareness program" by providing information on the risks of using the products and on how to deal with the products.

Workers certified to use the compounds will be required to wear protective clothing and, in some instances, respirators. A Less-Toxic Dioxin

Pentachlorophenols contains dioxin, albeit an isomer considerably less toxic than the dioxins that contaminated Times Beach, Mo.. The use of pentachlorophenols will be prohibited for wood intended to be used indoors except for millwork and support structure.

The agency is also requiring that the level of dioxin in pentachlorophenol be reduced to 15 parts per million immediately and to one part per million within 18 months.

When creosote or pentachlorophenol are used on wood inte nded for contact with humans, such as outdoor furniture, it must be treated with shellac or some other sealant under the new rules.

At a news conference today, Mr. Moore said the rules provide protection "where it is needed most - that is, to persons who apply wood preservatives and who handle wood during its installation." He said the danger to people casually exposed to the compounds is low. Industry Appears Satisfied

Industry spokesmen welcomed the new rules. E. David Lewis of the Society of American W ood Preservers said that "at first blush it appears to be a very reasonable approach that E.P.A. has taken."

Robert A. Kirshner, environmental counsel for the National Forest Products Association, also called the rules "reasonable" and added that while the market for the preservatives may be reduced, "there will still be a market for over the counter sales."

Environmental groups were disappointed, however. Jay Feldman, coordinator of the National Coalition Against the Misuse of Pesticides, said "the new controls will not adequately prevent or preclude the problems identified by the agency, including cancer and birth defects."

81) URBAN RUN OFF FROM PENTACHLOROPHENOL 19%

Environmental Assessment

Waterways and receiving waters near urban and suburban are as are often adversely affected by urban storm water runoff. The degree and type of impact varies from location to location, but it is often significant relative to other sources of pollution and environmental degradation. Urban storm water runoff affects water quality, water quantity, habitat and biological resources, public health, and the aesthetic appearance of urban waterways. As reported in the National Water Quality Inventory 1996 Report to Congress (US EPA, 1998d), urban runoff was the leading sourc e of pollutants causing water quality impairment related to human activities in ocean shoreline waters and the second leading cause in estuaries across the nation. **Urban runoff was also a significant source of impairment in rivers and lakes.** The percent of total impairment attributed to urban runoff is substantial. This impairment constitutes approximately 5,000 square miles of estuaries, 1.4 million acres of lakes, and 30,000 miles of rivers. Seven states also reported in the Inventory that urban runoff co ntributes to wetland degradation. Adverse impacts on receiving waters associated with storm water discharges have been discussed by EPA (1995b) in terms of three general classes. These are:

• Short-term changes in water quality during and after storm events including temporary increases in the concentration of one or more pollutants, toxics or bacteria levels.
• Long-term water quality impacts caused by the cumulative effects associated with repeated storm water discharges from a number of sources.
• Physical impacts due to erosion, scour, and deposition associated with increased frequency and volume of runoff that alters aquatic habitat.
As described in the Terrene Institute's Fundamentals of Urban Runoff Management (Horner et al, 1994), pollutants associated with urban runoff potentially harmful to receiving

waters fall into the categories listed below:

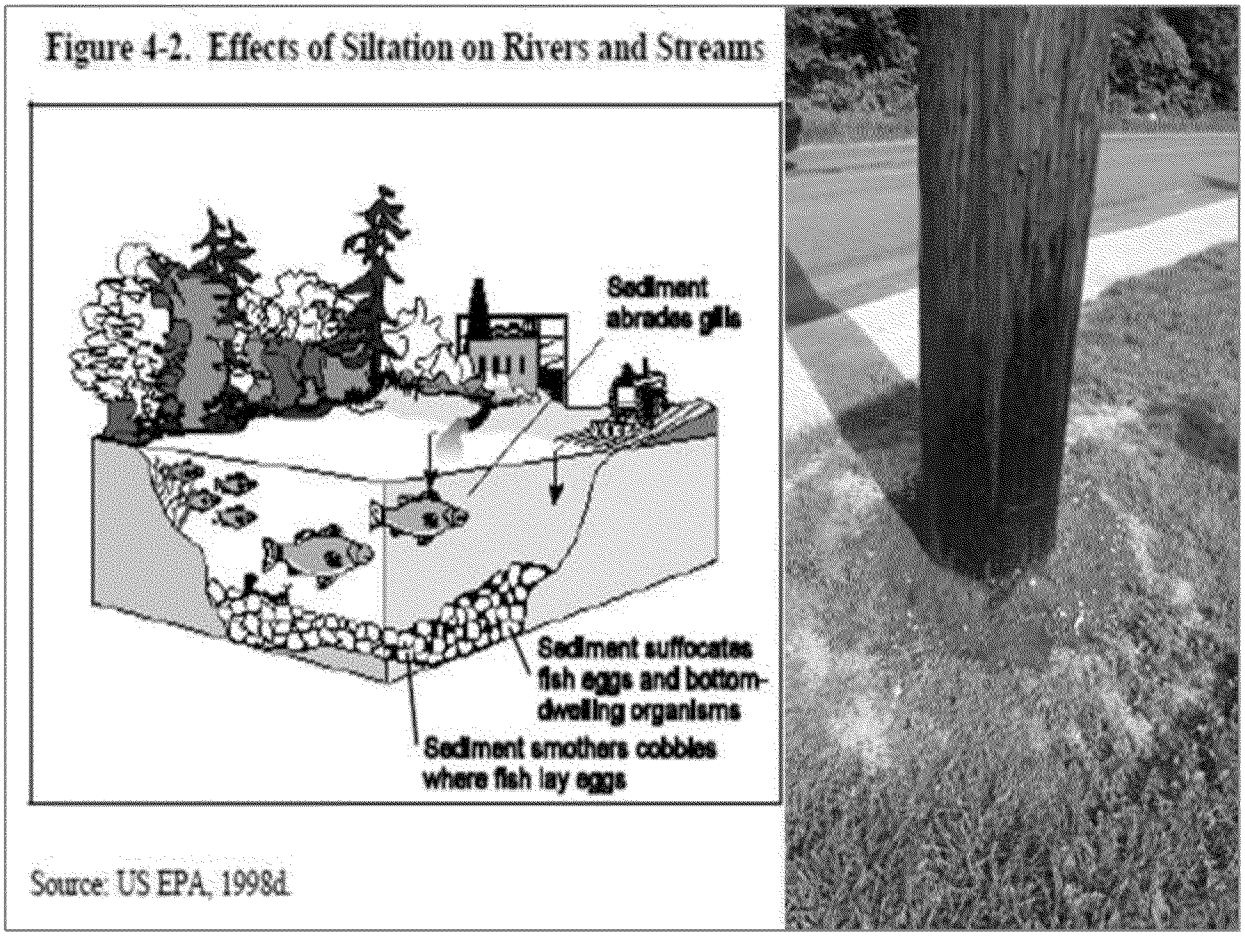
EPA-HQ-2018-000065-0001892

Table 4-7. Most Frequently Detected Priority Pollutants in Nationwide Urban Runoff Program Samples (1978-83)

Inorganics	Organics
Detected in 75% or more	
94% Lead 94% Zinc 91% Copper	None
Detected in 50-74%	
58% Chromium 52% Arsenic	None
Detected in 20-49%	
48% Cadmium 43% Nickel 23% Cyanides	22% Bis(2-ethylhexyl)phthalate 20% α-Hexachloro-cyclohexane
Detected in 10-19%	
13% Antimony 12% Beryllium 11% Selenium	19% α-Endosulfan 19% Pentachlorophenol* 17% Chlordane* 15% Lindane* 15% Pyrene** 14% Phenol 12% Phenanthrene** 11% Dichloromethane 10% 4-Nitrophenol 10% Chrysene** 10% Fluoranthene**

* Chlorinated hydrocarbon

EPA-HQ-2018-000065-0001893



82) NEW YORK STATE CRIMINAL JUSTICE SERVICES

RESTRICTED CHEMICAL MATERIAL (a) Any halogenated hydrocarbon chemical (aliphatic or. aromatic) including but not limited to trichloroethane, tetrachloroethylene, methylene chloride, halogenated benzene, carbon tetrachloride; or (b) any aromatic hydrocarbon chemical including but not limited to benzene, toluene, naphthalene; or (c) any halogenated phenol derivative in which a hydroxide group and two or more halogen atoms are substituted onto the aromatic carbons of a benzene ring including but not limited to trichlorophenol, pentachlorophenol; or (d) acrolein, acrylonitrile, or benzidine. (ECL § 39-0103(4))

NEW YORK STATE
Mario M. Cuomo, Governor

DIVISION OF CRIMINAL JUSTICE SERVICES
Richard H. Girgenti
Director of Criminal Justice and Commissioner

DICTIONARY OF TERMS AND LEGAL DEFINITIONS RELATED TO HAZARDOUS, MEDICAL AND SOLID WASTE

135923

tate Division of Criminal Justice Services
tal Offending Project

stice Systems Analysis
tatistical Services
1991

83) SPRING FIELD OREGON – PENTACHLOROPHENOL PLUME

EWEB

MEMORANDUM

EUGENE WATER & ELECTRIC BOARD
ENVIRONMENTAL MANAGEMENT

Rely on us.

TO: Commissioners Brown, Cunningham, Cassidy, Ernst and Farmer

FROM: Debra Smith and David Donahue

DATE: November 09, 2010

SUBJECT: Update on the PCP plume from International Paper Containerboard Plant in Springfield

Issue

The Weyerhaeuser Company and now the International Paper Company (IP) have been working with the Oregon Department of Environmental Quality (DEQ) since 1995 to address groundwater contamination associated with its Springfield mill site located at 785 North 42nd Street, near the vicinity of the McKenzie River (Figure 1). EWEB should periodically evaluate the progress of this cleanup to make sure the McKenzie is not threatened from the **pentachlorophenol (PCP) groundwater plume** migrating northward from the IP plant. Staff has provided detailed background material and a summary of the analytical results for Commissioners who are interested in the technical data. Alternatively, if not interested in that level of detail, Commissioners can skip to the discussion section of the memo. Analytical results presented in this memorandum reflect the most recent data made available to staff since the previous plume update presented to the Board on November 17, 2009.

Background

Weyerhaeuser began operations at its Springfield facility in 1948. Until 1987, some of the lumber products produced at this **location were surface treated in on -site tanks with PCP, a wood preservative. PCP** has not been used at the site since that time. When the sawmill facility was removed in 1991, Weyerhaeuser discovered that the past practices of spraying and dipping of wood with PCP had contaminated surface soils and groundwater at the mill site. The company signed a Consent Order with the DEQ in September 1995, agreeing to investigate the contamination and identify potential solutions to protect human health and the environment.

During the investigation, Weyerhaeuser took a number of interim corrective actions to minimize the contamination and to pro tect public drinking water sources. These actions included removal and secure disposal of contaminated soil, asphalt paving in the area where PCP was applied to prevent the infiltration of precipitation, and sediment removal from a **storm water ditch where PCP-related compounds had been detected in sediments.** In addition, many groundwater monitoring wells were drilled at various depths in the vicinity of the site, and groundwater samples were collected (Figure 2). PCP was detected at concentrations equal to or exceeding 1 part per billion (ppb or µg/L), which is the U.S. Environmental Protection Agency maximum contaminant level for pentachlorophenol in drinking water. Weyerhaeuser coordinated with Springfield Utility Board (SUB) and Rainbow Water District (RWD) to collect groundwate r samples from the operating municipal production wells. These wells are located northwest of the plant site (Figure 2). EWEB's raw water intake is located approximately one mile downstream from this well field.

EPA-HQ-2018-000065-0001896

PCP was detected at concentrations equal to or exceeding 1 part per billion (ppb or µg/L), which is the U.S. Environmental Protection Agency maximum contaminant level for pentachlorophenol in drinking water.

EWEB Hayden Bridge and Drinking Water Source Protection staff have been collecting water samples from Keizer Slough, 42nd and 52nd Street Stormwater channels, and raw water at the treatment plant since 2002 on a regular basis for pentachlorophenol analysis (among other analytes). **There have been seven detections out of 127 samples submitted for PCP analysis.** Results indicate low levels of PCP were detected in water samples collected from Keizer Slough (0.47 µg/L) and 42nd Street stormwater channel (0.20 µg/L) in May 2005. Low levels of PCP were also detected in 42nd Street and 52 Street stormwater channels in March and April 2005 ranging from 0.08 to 0.16 µg/L. There have been no PCP detections in raw water at the EWEB treatment plant above laboratory detection limits.

Analysis of the preliminary results once again indicates the presence of pentachloroanisole in both raw water (EWEB's filtration plant) and upstream sites at levels similar to those detected in 2007.

84) BELLINGHAM WASHINGTON STORM DRAIN WHATCOM CREEK

WASHINGTON STATE DEPARTMENT OF ECOLOGY

DRAINAGE BASIN TRACING STUDY: PHASE II CHEMICALS FOUND IN STORM DRAINS, WHATCOM CREEK AND SQUALICUM HARBOR IN BELLINGHAM, WASHINGTON

https://fortress.wa.gov/ecy/publications/publications/99337.pdf

Fifteen pesticides were detected in water. Each sample from the four sites examined had detectable levels of at least three pesticides. Although pesticide concentrations were lowest for organophosphorous pestic ides – chlorpyriphos, diazinon, and malathion – these were the most likely to affect aquatic organisms due to their acute toxicity. These three pesticides were above recommended maximum concentrations (RMCs) to protect aquatic life (NAS/NAE, 1973) in water samples from Cable Street. Cable Street also had pentachlorophenol

concentrations above criteria to protect human health. Park Place and Cemetery Creek had concentrations of diazinon above RMCs.

> Pentachlorophenol (PCP) was found in the two Whatcom Creek sites with the higher concentration in the farther downstream site. The marine criteria for PCP is 360 ppb dry weight. The farther downstream site on Whatcom Creek (WHAT1) had one measurement of 430 ppb dry weight. Whatcom Creek feeds the Maritime Heritage Fish Hatchery which has experienced periodic fish kills (Kendra and Willms, 1990). Farther up the creek is Brooks Lumber, which may be leaching this chemical. Whether the occurrence of pentachlorophenol is from past or current discharge is not clear. Pentachlorophenol is somewhat water soluble and photodegrades so that compounds found in surface sediments probably have been recently deposited. Pentachlorophenol was also found at low concentrations at BELL091, BELL092 and BELL132. Along with other chlorinated phenols, PCP was found at concentrations above marine criteria at BELL162 along Bennett Avenue.

Existing Water Quality Data for Whatcom Creek

https://fortress.wa.gov/ecy/publications/publications/99337.pdf

Existing Water Quality Data for Whatcom Creek Water quality degradation has been a factor in the decline of fish populations in Whatcom Creek and is a potential threat to public health. Whatcom Creek was listed on the 1996 state 303(d) list of impaired water bodies for **pentachlorophenol,** temperature and fecal coliform violations of water quality standards. It remains on the state's proposed 303(d) list for 1998.

Past sampling efforts have identified water quality contaminants originating from urban stormwater runoff. In 1981 a spill of pentachlorophenol tainted oil from the Brooks Lumber facility resulted in a fish kill at the M HFH. Recurrent MHFH fish kills have been linked with metals and pentachlorophenol from stormwater tributaries and creek sediments (Kendra, 1988, Ostergaard, 1992). Kendra (1988) also detected PAHs and pesticides. Metals, PAHs, and chlorinated phenols were detected in Whatcom Creek during tributary drainage basin studies (PTI, 1991a, Cubbage, 1994). Hirsch (1996) also detected metals in Whatcom Creek near its mouth. The city of Bellingham urban streams monitoring data show state surface water quality violati ons (173-201A WAC) for fecal coliforms, temperature, and dissolved oxygen in more than 10 percent of samples collected between 1991 and 1995 for Whatcom Creek and its tributaries.

EPA-HQ-2018-000065-0001898

RECEIVING WATER AND SEDIMENT SAMPLING:
AMERICAN CROSSARM AND CONDUIT PENTACHLOROPHENOL SPILL

87-e36

Segment No. 10-23-13

Washington State Department of Ecology
Water Quality Investigations Section
Olympia, Washington 98504-6811

WA-23-1020

May 1987

ABSTRACT

Subsequent to the November 1986 flood which resulted in the spillage of wood-preserving chemicals at American Crossarm and Conduit (Chehalis, Washington), water and sediment samples were collected for analysis. Elevated concentrations of pentachlorophenol and polynuclear aromatic hydrocarbons were detected in water and sediment from a storm drain lagoon which discharges to Dillenbaugh Creek. Pentachlorophenol was detected in the creek at concentrations near and above the EPA chronic water quality criterion for protection of aquatic organisms. Several polychlorinated dioxins (not TCDD) and dibenzofurans were detected in bottom sediments from the storm drain lagoon and creek.

INTRODUCTION

On November 24 and 25, 1986, heavy flooding caused wood-preserving chemicals to leak from underground storage tanks and open sumps at the American Crossarm and Conduit (ACC) facility in Chehalis, Washington. A portion of this spill drained to the John's Street storm drain which routed the spill southwest to a lagoon which discharges to Dillenbaugh Creek, a tributary of the Chehalis River (Figure 1). Additional routes of contamination probably occurred at the height of the flood during which the lower Dillenbaugh Creek drainage, including much of the ACC property and nearby residential areas of Chehalis, was inundated.

Contamination of the John's Street storm drain and Dillenbaugh Creek by ACC operations had been previously documented by field inspectors from Ecology's Southwest Regional Office and investigators from the Water Quality Investigations Section (WQIS) (Crawford, 1987).

The Hazardous Waste Cleanup Program (HWCP), through Mike Blum, requested that WQIS design and conduct a survey to determine the extent of water and sediment contamination resulting from the spill. This document reports the results of that survey.

85) PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL

5.1 PRODUCTION

Vulcan Chemicals, a division of Vulcan Materials Company (Wichita, Kansas), is the only current domestic manufacturer of pentachlorophenol (SRI 1998). Pentachlorophenol is produced by the stepwise chlorination of phenols in the presence of catalysts (anhydrous aluminum chloride or ferric chloride). Outside of the United States, it is also produced by the alkaline hydrolysis of hexachlorobenzene. Typically, commercial grade pentachlorophenol is 86% pure. Contaminants generally consist of other polychlorinated phenols, polychlorinated dibenzo-p-dioxins, and polychlorinated dibenzofurans, which are formed during the manufacturing process (see Table 3-2). Pentachlorophenol has also been marketed in the past as a water-soluble sodium salt, a 5% emulsifiable concentrate, or a 3–40% solution in formulation with other chlorophenols, methylene bisthiocyanate, or copper naphthenate (IARC 1979). Production volumes for 1983–1986 were as follows: 45 million pounds in 1983; 42 million pounds in 1984; 38 million pounds in 1985; and 32 million pounds in 1986 (Mannsville 1987). About 24 million pounds were manufactured in 1987 by Vulcan Materials (HSDB 2001). More recent production data are not available. For further information on facilities in the United States that manufacture or process pentachlorophenol, refer to Table 5-1. Table 5-1 is derived from Toxics Release Inventory (TRI) data and reports only those facilities that release pentachlorophenol.

5.2 IMPORT/EXPORT

The U.S. consumption of pentachlorophenol for 1986 was reported to be 28 million pounds (CMR 1987). In 1982, 121,000 pounds of pentachlorophenol were imported to the United States (328,000 pounds were imported in 1980). In 1985, 3 million pounds of pentachlorophenol were exported, and in 1986, 2 million pounds were exported (Mannsville 1987). More recent data on the import/export volumes of pentachlorophenol are not available.

5.3 USE

Pentachlorophenol was one of the most widely used biocides in the United States. It was registered for use by EPA as an insecticide (termiticide), fungicide, herbicide,

EPA-HQ-2018-000065-0001900

molluscicide, algicide, disinfectant, and as an ingredient in antifouling paint (Cirelli 1978a), but it has been a restricted -use pesticide since July 1984 (CELDS 1992; EPA 1984a). The principal use of pentachlorophenol is as a wood preservative

(registered by EPA for power-line poles, cross arms, fence posts, and the like). The treatment of wood for utility poles represents 80% of the U.S. consumption of pentachlorophenol (CMR 1987). However, pentachlorophenol is no longer contained in wood preserving solutions or insecticides and herbicides available for home and garden use since it is a restricted-use pesticide. Pentachlorophenol is used for the formulation of fungicidal and insecticidal solutions and for incorporation into other manufactured pesticide products. These nonwood uses account for no more than 2% of U.S. pentachlorophenol consumption (Mannsville 1987). This wide spectrum of uses was partially attributed to the solubilities of the nonpolar pentachlorophenol in organic solvents, and the sodium salt in water.

5.4 DISPOSAL

After treatment with sodium bicarbonate or a sand-soda ash mixture, pentachlorophenol can be incinerated. Incineration of pentachlorophenol is one of the most important sources of polychlorinated dibenzo-p-dioxins and dibenzofurans, so care must be taken during this process (Karasek and Dickson 1987). Pentachlorophenol has been designated as a hazardous substance, a hazardous pollutant, a toxic pollutant, and a hazardous waste by EPA. Disposal of pentachlorophenol is subject to EPA restrictions (EPA 1991, 1992).

86) TRIBAL LANDS PENTACHLOROPHENOL CONTAMINATION

http://www7.nau.edu/itep/main/docs/Conferences/15TLF_Booklet_v8.pdf

soil and possible creosote groundwater contamination, Underground Storage Tanks (USTs), soil and possible groundwater contamination by entachlorophenol of unknown origin, and uncharacterized demolition debris.

Program Highlights

http://nepis.epa.gov/Exe/ZyPDF.cgi/P100AIWD.PDF?Dockey=P100AIWD.PDF

The Masonite Mill Creek property previously contained two underground storage tanks (UST), which leaked roughly 1 0,000 gallons of diesel fuel into the soil. The soil was also contaminated with pentachlorophenol from wood preservative activities conducted on the property. The USTs were removed and approximately 1,700 cubic yards of diesel / pentachlorophenol contamina ted soil was removed and stockpiled adjacent to the excavation. The contaminated soil was conditioned through exposure to the sun and by adding organic material. This process called "in -situ land farming," reduced the contamination levels in the soil so th at it is no longer a threat to human health or the environment. After the soil was treated, vegetation was planted to add nutrients to the soil. The goal of this project is to create a tribal agricultural lot of 25 acres that will provide alfalfa or relate d crops to the tribal agricultural interests in the Valley. Use of the Mill Creek property as an agricultural lot was chosen because of the dwindling agricultural lands on the reservation that are available to tribal members. Since the property is located in a fl oodplain, it is not appropriate for housing use ...

87) DOW CHEMICAL PENTACHLOROPHENOL CONTAMINATION

St. Clair River

In 1996, Dow Chemical removed approximately 200 m3 of pentachlorophenol contaminated sediment. The removal took place about 1 km south of the Cole Drain, about 30 m offshore. The total project cost was estimated at $350,000 (Canadian).

88) THE US MILITARY'S OWN INSPECTOR GENERAL

http://reimaginerpe.org/files/3-2%20all.pdf

The US mil itary's own Inspector General, in an internal 1986 study, revealed serious hazardous waste disposal problems in overseas bases including the Philippines. These problems involved wastes containing pentachlorophenol (a lethal poison), the toxic metal lithium, and PCBs

Page Six Summer 1992 Race, Poverty & the Environment

The Environmental Legacy of US Bases in the Philippines

by Jorge Emmanuel

no legal liability for the environmental damage caused by its bases.

the environment at overseas military bases. There are at least 300 toxic contamination sites in US Army bases in West Germany. The US Air Force

89) WOODEN BOATS AND PENTACHLOROPHENOL

http://www.woodenboat.com/library-content/woodenboat100.pdf

Mildewcides The effectiveness of a mildewcide is directly proportion al to its toxicity to mold fungi. Unfortunately, many of the most effective mildewcides are also hazardous to human health — pentachlorophenol (PCP) being the most blatant example. As I have pointed out in several previous columns, I do not recommend the us e of PCP under any circumstances. Several other less toxic chemicals are also reasonably effective in controlling mold growth: copper naphthenate; zinc naphthenate; copper-8- quinolinolate; bis-(tri-n-butyltin) oxide (TBTO); 2 -(4-thiazolyl) benzi -midazol; 3-iodo-2-propynyl-butyl-carbamate (Polyphase); and chromium trioxide (chromic acid). With the exception of chromium trioxide (which is dissolved in water), the above chemicals are

WoodenBoat

THE MAGAZINE FOR WOODEN BOAT OWNERS, BUILDERS AND DESIGNERS

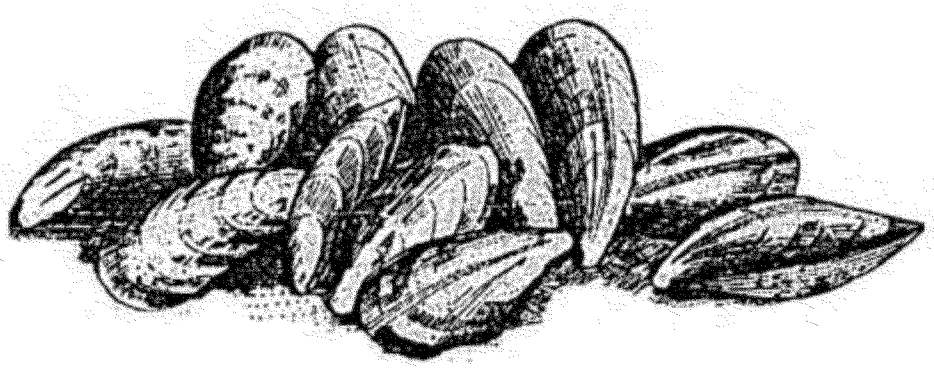
90) SHELLFISH CONTAMINATION

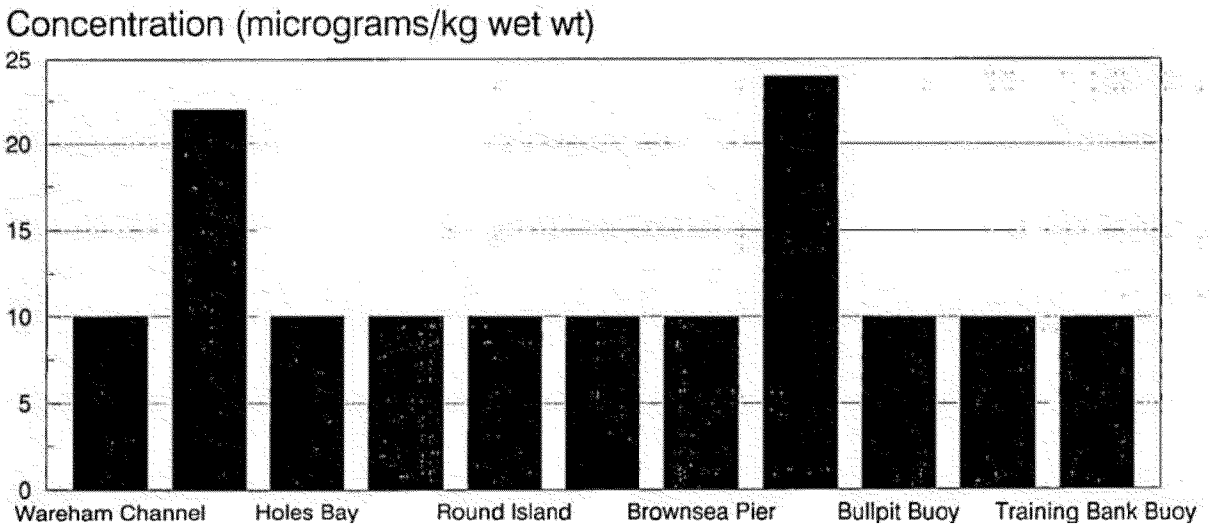
http://ea-lit.freshwaterlife.org/archive/ealit:2612/OBJ/19000644.pdf

NRA WESSEX REGION

EEC SHELLFISH DIRECTIVE

Analysis of Bacteriological contamination and accumulation of metals and organics in the mussel *(Mytilus edulis)*

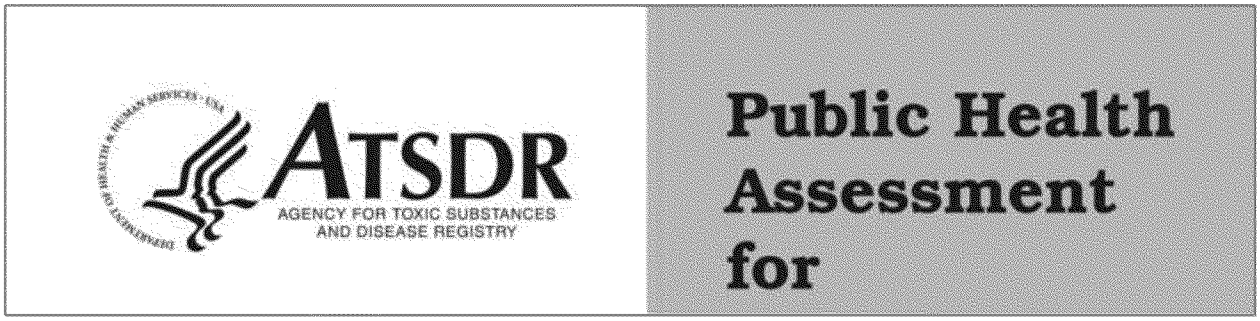




91) TANANA RIVER - EIELSON AIR FORCE BASE (EAFB) ALASKA

EIELSON AIR FORCE BASE (EAFB) FAIRBANKS NORTH STAR BOROUGH, ALASKA EPA FACILITY ID: AK1570028646 JUNE 14, 2006

http://www.atsdr.cdc.gov/HAC/pha/Eielson%20Air%20Force%20Base/EielsonAFB-PHA061406.pdf



Groundwater (ppb): Benzene (3,100), toluene (9,980), ethylbenzene (2,020), xylene **(11,770), pentachlorophenol** (39), bis(2-ethylhexyl)phthalate (11), and lead (5,100) were found above CVs. Surface Soil (ppm): Sampling during the RI found benzo(a)-pyrene (1.25) above the CV, and dibenz(a,h)anthracene (0.47) about equal to the CV

E-4 Fuel Storage and Fuel Tank Sludge Burial Area (ST13, DP26)	ST13 and DP26 cover 7-acres along the southeast end of the main base taxiway. Tank sludge was deposited at DP26 before 1980 and fuels were released at ST13 from leaks and spills at storage facilities.	**Groundwater (ppb)**: Benzene (3,100), toluene (9,980), ethyl-benzene (2,020), xylene (11,770), pentachlorophenol (39), bis(2-ethylhexyl)phthalate (11), and lead (5,100) were found above CVs. **Surface Soil (ppm):** Sampling during the RI found benzo(a)-pyrene (1.25) above the CV, and dibenz(a,h)anthracene (0.47) about equal to the CV.	Leaking storage tanks, impacted soils, and Building #1240 were cleared from ST13 and DP26 between 1988 and 1994. Remedial actions selected under the ROD signed in September 1994 have focused on decreasing BTEX and lead levels in groundwater. They have included passive fuel product recovery, bioventing, soil vapor extraction, and groundwater monitoring.	Based on a review of site data and potential exposure scenarios, ATSDR anticipates no potential public health hazards at ST13 and DP26. The public has limited access to this site and no drinking water wells are located nearby. Groundwater beneath ST13 and DP26 will continue to be monitored in the future.

http://www.newsminer.com/news/local_news/army-to-pay-epa-fine-for-munitions-dump-near-the/article_1e860ef8-9e0b-11e5-8392-fba4ac93cda7.html

Army to pay EPA fine for munitions dump near the Tanana River

92) ESCAMBIA TREATING COMPANY (ETC) MISSISSIPPI

http://chej.org/wp-content/uploads/Superfund-35th-Anniversary-Report1.pdf

Escambia Treating Company (ETC) operated from 1942 to 1982, using creosote and pentachlorophenol (PCP) to treat wood. The resulting residues are highly toxic and persistent in the environment and the human body. EPA sampling investigations detected dioxins, PCP, polycyclic aromatic hydro-carbons (PAHs), arsenic and other contaminants at high levels in the soil and sludge, offsite as well as onsite. The huge groundwater plume contains elevated levels of naphthalene, benzene, PAHs, phenol and vinyl chloride.

Mississippi:
Newsom Brothers/
Old Reichhold Chemicals, Inc.
Columbia

"Suffering is suffering," Charlotte Keys said. Unfortunately, the Mississippi evangelist is preaching to the choir in her small rural community. "When your population is as small as ours, people tend to turn a deaf ear. A great injustice has been served on people who have been oppressed, suppressed and depressed." The deaf ear Keys is talking about belongs to Reichhold Chemical Company.

Almost 50 years ago, the company took over more than 100 acres to produce turpentine, resins and other wood derivatives. By 1975, Reichhold had people working in the plant handling deadly toxins, such as pentachlorophenol (PCP) mixed with diesel oil. A year later, the Mississippi Air and Water Pollution Control Commission found the company was discharging wastewater containing phenols, oil and grease into a nearby stream. Reichhold continued operations until 1977, when a major blast destroyed the facility, ceasing operations.

93) OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

http://www.deq.state.or.us/lq/ECSI/ecsidetail.asp?seqnbr=275

Substance Contamination Information		
Substance	**Media Contaminated**	**Concentration Level**
CAUSTICS	Surface Water	Unknown
CHLOROBENZENE	Groundwater	17 ppb
DICHLOROBENZENE,1,4-	Groundwater	4.6 ppb
DIESEL - FUEL OIL	Soil	69,000 ppm
FORMALDEHYDE	Groundwater	1,800 ppb
GASOLINE	Soil	10,000 ppm
PCBs	Soil	90,000 ppm
PENTACHLOROPHENOL	Groundwater	7.6 ppb
PENTACHLOROPHENOL	Soil	30 ppm
TETRACHLOROETHYLENE	Groundwater	4.3 ppb
VINYL CHLORIDE	Groundwater	1.2 ppb

DEQ files contain numerous references to releases of hazardous materials at this large site, during the late 1960s and early 1970s. In 1967, plywood glue from above-ground tanks spilled into Johnson Creek, and routine disposal into the creek of glue wastes/tank sludges may have occurred. In 1973, up to 10,000 pounds of a red-brown caustic solution overflowed a tank during refilling, and entered the creek, causing a major fish kill. The facility was no longer used as a sawmill after about 1978, when Smurfit consolidated its operations at the Oregon City plant. Smurfit sold the majority of the site to Freeway Land Company in 1994. In 1989 Smurfit began to evaluate the extent of contamination at the site, and hired a consultant to perform Level I and II assessments. The Level II report included sample results from soil and groundwater; the samples were collected from areas judged to have the highest potential for contamination. The report identified significant on-site contamination as follows: 1) pentachlorophenol (PCP), and petroleum hydrocarbons in soil around the former plywood oiling building at the southern end of the site (soil in this area was later found to contain PCBs as well);

94) STELLA-JONES CORPORATION

http://www3.epa.gov/pesticides/chem_search/ppls/073408-00005-20150528.pdf

Signature of Approving Official:	Date:
Jacqueline Hardy, Product Manager 34 RMB II, Antimicrobials Division (7510P)	5/28/15

EPA Form 8570-6

U.S. ENVIRONMENTAL PROTECTION AGENCY Office of Pesticide Programs Antimicrobials Division (7510P) 1200 Pennsylvania Ave., N.W. Washington, D.C. 20460	EPA Reg. Number: 73408-5	Date of Issuance: 5/28/15
NOTICE OF PESTICIDE: _X_ Registration ___ Reregistration (under FIFRA, as amended)	Term of Issuance: Conditional	
	Name of Pesticide Product: Stella-Jones Penta	

Name and Address of Registrant (include ZIP Code):

Stella-Jones Corporation
Two Gateway Center-Suite 1000 (10th Floor)
603 Stanwix Street
Pittsburgh, PA 15222

WARNING

FIRST AID	
IF INHALED:	Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.
IF SWALLOWED:	Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not give anything by mouth to an unconscious person. Do not induce vomiting unless told to by a poison control center or doctor.
IF IN EYES:	Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
IF ON SKIN OR CLOTHING:	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
NOTE TO PHYSICIAN:	This product is a metabolic stimulant. Treatment is supportive. Forced Diuresis may be effective to reduce total body-burden. Treat hyperthermia with physical measures. Do not administer aspirin, phenothiazines or atropine since they may enhance toxicity.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	

ACCEPTED
5/28/2015
Under the Federal Insecticide, Fungicide

Hazards to Humans and Domestic Animals

WARNING

May be fatal if swallowed. Causes substantial but temporary eye injury. Do not get in eyes or on clothing. Harmful if inhaled. Avoid breathing dust. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco products, or using the toilet. Remove and wash contaminated clothing before reuse. Wear appropriate protective eyewear such as goggles or face shield.

FOR CHEMICAL EMERGENCY. Spill, leak, fire, exposure, or accident call CHEMTREC 1-800-424-9300.

The U.S. EPA has determined that pentachlorophenol can produce defects in the offspring of laboratory animals. Exposure to pentachlorophenol during pregnancy should be avoided.

PERSONAL PROTECTION EQUIPMENT (PPE)

All personnel handling treated wood or handling treating equipment (including poles/hooks used to retrieve charge cables) that has come in contact with preservative must wear the following PPE:

- washable or disposable coveralls or long-sleeved shirt and long pants;
- chemical-resistant gloves; and,
- socks plus industrial grade safety work boots with chemical resistant soles.

All personnel cleaning or maintaining the treatment cylinder gasket/equipment or working with concentrate or wood treatment preservative must wear the following PPE:

- washable or disposable coveralls or long-sleeved shirt and long pants;
- chemical-resistant gloves;
- socks plus industrial grade safety work boots with chemical resistant soles; and,
- a full face shield.

NOTE TO USER: As used on this label, the term "respirators' means property fitting, well-maintained, half-mask canister or cartridge respirators which are MSHA/NIOSH-approved for organic vapors and acid gases. Examples if acceptable materials for protective clothing (e. g., gloves, overalls, jackets, and boots) required during application and handling of pentachlorophenol are polyvinyl acetate (PVA), polyvinyl chloride (PCV), neoprene, NBR (Buna-N), and nitrile. In addition, plastic-coated disposable coveralls impervious to dust are acceptable for dust protection.

ENVIRONMENTAL HAZARDS

This product is toxic to fish and wildlife. Do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water by cleaning of equipment or disposal of wastes.

Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with requirements of a National Pollutant Discharge Elimination System (NPDES) permit, and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

95) IDAHO POLE CO.

http://www.toxicsites.us/site.php?epa_id=MTD006232276

CEDAR ST

The Idaho Pole Co. (IPC) wood treating facility began operation in 1945 using creosote to preserve wood. In 1952 the company switched to pentachlorophenol in carrier oil (similar to fuel oil) for the wood treating solution. Site processes included pole treatment in butt vats with later addition of pressurized heated retort equipment in the area south of Cedar St. Treated poles were stacked for drying and shipment in the area. Burlington Northern operated a railroad roundhouse where wood treating chemicals and timber were shipped in and treated poles were shipped out of the site. Pole treatment processes included pole peeling with a bark-fill area for wood waste north of Cedar St. The current I-90, including surface water culverts, was constructed some time after wood-treating activities commenced at the site. In 1975 a pressurized heated retort was added for treating full length poles. The pole-length vats were removed in the early 1980s. There was also a drying area where treated poles were stored prior to shipment. IPC continued wood treating with a pressurized heated retort and butt-dipping vat until September 1997 when the company ceased wood-treating operations. In 1978, the Montana Department of Fish, Wildlife and Parks notified the Montana Department of Health & Environmental Services (MDHES) of a suspected release of oily wood treating fluid from the plant. MDHES found evidence of a release in ditches near the facility and near Rocky Creek. Consequently, MDHES issued a compliance order on September 29, 1978, notifying IPC of statutory violations and directing the company to stop uncontrolled releases and to clean up spilled treating fluid. The company built an interceptor trench along a portion of the property line to halt some of the pentachlorophenol (PCP) from entering the groundwater. In 1983, EPA and the state sampled the trench and found that PCP was moving away from the plant. EPA proposed the facility for the National Priorities List (NPL) in 49 FR 40320 of October 15, 1984. The listing was final on June 10, 1986 in 51 FR 21054. The Idaho Pole Co. Superfund Site is located near the northern limits of Bozeman, Montana, in the east half of Section 6 and the west half of Section 5, Township 2S, Range 6E of Gallatin County. The site includes about 75 acres, of which approximately 65 acres are owned by Idaho Pole Co. A small section of I-90 (transects the property. The area to the south of I-90 consists of 41.4 acres and is currently zoned M-2 (heavy industrial). This southern portion of the property is bound by Montana Rail Link (MRL) tracks to the south, an old MRL rail spur and the Montana Ready Mix and Crane Service Company to the east, I-90 to the north, and residential property, "L" Street and commercial property (Empire Building Materials) to the west. The property is bisected by Cedar Street, which runs east-west across the property. According to the City of Bozeman, the planned future land use for that portion of the property is industrial. Significant remaining features of the property include offices, groundwater extraction and injection galleries, monitoring

EPA-HQ-2018-000065-0001910

wells, a water treatment building and areas where treated soils have been left in place. The property to the north of I-90 comprises 32.8 acres. This area contains property owned by Idaho Pole Co. and Northwestern Energy. It is bound by Bohart Lane and I-90 to the south, Rocky Creek to the east, and residential property to the north and west. "L" Street runs along the western edge of the property, bisecting the northwestern comer of the property. The existing zoning for the area north of I-90 is a mixture of manufacturing and residential. According to the city of Bozeman, the planned future land use is industrial and residential. The Idaho Pole Company was founded in 1946 and is privately owned by McFarland Cascade Holdings, Inc. (MCHI). On November 30, 2012, MCHI was bought by Montreal-based Stella Jones, Inc. However, the McFarland family has retained the Idaho Pole properties located in Bozeman and assigned a new project manager to the site.

Ban 'penta' in the U.S., too

The East Hampton Environmental Coalition is made up of 17 environmental East End organizations with total membership of about 6,000. Each year, we create an East Hampton Green Guide to summarize members' concerns, detailing recommended actions for local politicians. We share a passion for and commitment to the preservation of our unique environment.

Coalition members have requested that Assemb. Fred Thiele Jr. (I-Sag Harbor) and state Sen. Kenneth LaValle (R-Port Jefferson) continue fighting for passage of their co-sponsored bill to prohibit the use of the toxic chemical pentachlorophenol "with regard to new or existing transmission utility poles or facilities." The bill is stalled in committees. We're concerned that the ban will die there.

In May, the Stockholm Convention on Persistent Organic Pollutants, an international environmental treaty, approved a global ban on this toxic chemical. The United States has not signed the treaty and is not bound by it.

It's time for Long Islanders to demand that our electric grid be updated in a 21st century, sustainable way that is safe for the environment and people.

NEWSDAY / AUDREY C. TIERNAN

North Hempstead Supervisor Judi Bosworth and Sen. Chuck Schumer speak in March about utility poles treated with pentachlorophenol.

Helene Forst
East Hampton

Editor's note: The writer is the chairwoman of Long Island Businesses for Responsible Energy.

96) RG HALEY INTL CORP BELLINGHAM,

https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=3928

The R.G. Haley site consists of about six upland acres and a larger in-water area on the Bellingham waterfront south of the intersection of Cornwall Avenue and Wharf Street. Studies show that upland soil, **marine sediment, and groundwater within the site, are contaminated with wood treatment chemicals.** The site (PDF 459KB) includes land owned by the City of Bellingham and land owned by the State of Washington, managed by the State Department of Natural Resources.

From the mid-1800s to the mid-1900s, the site was used for industries including lumber, coal and wharf operations. **Various companies treated wood on the property** since before 1951. R.G. Haley International Corporation was the last company to treat wood there, from 1955 to 1985. Douglas Management Company bought the R.G. Haley property in 1990. The city of Bellingham then bought it in 2009.

In 2001 and 2002, Douglas Management investigated oil seeping into Bellingham Bay from the shoreline along the northern boundary of what is now the site. The investigations identified contaminants and located a floating hydrocarbon plume immediately inland from the oil seep. The ongoing release of contaminants to Bellingham Bay prompted the company to take emergency actions, coordinating with Ecology. Emergency measures included building a sheet pile wall along the shoreline, installing oil recovery wells, monitoring wells and equipment, removing some sediment, and building shoreline erosion protection. An additional action was taken in 2013 to arrest oil seepage into the bay from a different location on the shoreline.

Additional work to investigate the nature and extent of contamination at the site continued between 2002 and 2014, culminating in the issuing of a public-review draft remedial investigation report in August, 2015. A public review draft feasibility report describing an evaluation of cleanup alternatives was issued at the same time.

Contaminants at the site include pentachlorophenol (PCP), hydrocarbons related to diesel fuel, dioxins/furans, and polycyclic aromatic hydrocarbons (PAHs). These contaminants are present in concentrations that must be addressed under the state's cleanup law, the Model Toxics Control Act.

The R.G. Haley site is one of 12 cleanup sites in the Bellingham Bay Demonstration Pilot project, a coordinated bay-wide effort by federal, tribal, state and local governments to clean up contamination, control pollution sources and restore habitat, with consideration for land and water uses. The work is informed by the Bellingham Bay Comprehensive Strategy, completed by the pilot work group in 2000.

97) DIAMOND DISTRICT OF NORCO, A MISSISSIPPI DELTA

http://discovermagazine.com/2015/nov/16-the-peoples-scientist

It's like a ghost town now — empty and quiet, even at midday. Tall grasses have overtaken open fields where homes once stood. This used to be a thriving African - American neighborhood of 1,500 with roots that go back more than 200 years. Today, it's home only to a couple of dozen families.

The turning point came in 1980, when her lab tested workers at the Blue Grass Army Depot near Lexington, Ky., where crates of ammo from Vietnam had been stored to be decommissioned. The employees, who were civilians from poor parts of Appalachia, took the wood crating home and used it to panel walls, build bookcases or burn in the fireplace.

They'd be very sick, but they needed the job, so they'd go out the next morning. I was educating people all along the coast...talking about the chemicals they were being exposed to and how they needed protective gear."

"The wood had been soaked in so much pentachlorophenol that it was dripping out of the train cars," says Subra, who adds that the EPA recently categorized the pesticide as a likely carcinogen. "We found it in the blood and urine of the workers, and it had also contaminated the air and the soil when they took it home. But we were never able to go back to the community and tell them what we had found. And these people had a right to know."

98) BIO FUEL – DON'T BURN - PENTACHLOROPHENOL

The proposed rule preamble discussed many different forms of biomass, including cellulosic and non -cellulosic biomass.15 How the final rule views clean biomass was addressed earlier in Section V.B.1, which addresses traditional fuel. Manure was discussed in t he previous section (Section V.B.2), while pulp and paper sludges and resinated wood residuals will be discussed in more detail in Sections V.B.4 and V.B.6, respectively, of this preamble. This section discusses other biomass materials that may be burned a s a fuel, and whether or not they would be considered a solid waste when combusted as a fuel. **Specifically, the proposed rule identified lead -based painted wood, and wood treated with pentachlorophenol** , copper -based and borate-based compound treatments as solid wastes due to elevated contaminant levels relative to traditional fuels. Moreover, the proposed rule explained that, to the extent that any treated wood

is identified as a hazardous waste, it would not be eligible to be burned in a non -hazardous wast e combustion unit. We also specifically requested comment on the levels of contaminants in creosote-treated lumber due to the uncertainty associated with the level of contaminants (e.g., levels of polycyclic aromatic hydrocarbons present in creosote).16 We received comments on construction and demolition (C&D) -derived wood, treated wood, and OCC rejects.

Another commenter stated that treated wood (e.g., pentachlorophenol, copper -based compounds, borate based compounds) also should be considered a fuel becau se it is not discarded and can be safely burned in boilers. In addition, commenters stated that creosote treated wood is a coal derivative and burning creosote would likely result in emissions no greater than burning coal. Creosote is a distilled and homogenous product that should burn more thoroughly than coal and is not burned in its pure form. Commenters also noted that creosote treated wood is a combination of two materials we listed as traditional fuels. For these reasons, it should qualify as a fuel. However, the same commenter noted that they would not be opposed to EPA requiring CCA lumber to be removed from the fuel stream.

Although limited information was submitted in regard to painted wood or **pentachlorophenol,** copper-based and borate -based compou nd treated wood materials and **their contaminant concentrations,** we believe these secondary materials contain **elevated levels** **of contaminants relative to traditional fuels, and thus do not meet legitimacy criteria** and should be considered solid waste if bur ned in a combustion unit. (It should also be noted that to the extent that any of these treated **wood materials are identified as a hazardous waste** , it would not be eligible to be burned in a non -hazardous waste combustion unit.) In regard to creosote treat ed lumber, we believe there is still a fair amount of uncertainty associated with the level of contaminants (e.g., levels of polycyclic aromatic hydrocarbons present in creosote) in comparison to traditional fuels. We, therefore, are requesting that commen ters provide additional data on contaminant levels associated with these non -hazardous secondary materials relative to traditional fuels that are in use today as fuels.

99) 1995 NEWS PAPER WARRING

http://localhistory.wilmlibrary.org/sites/all/themes/Wilmington/images/1985-07-10.pdf

WEDNESDAY, JULY 8, 1992 PAGE 3-E

Safety first: the rule for outdoor play areas

By James C. Cooper

Building your backyard play area can be compared to making a favorite dessert. Both require a good recipe or design, both require the right ingredients or materials and both need to be done in the right location. The kitchen usually works best for cooking the dessert, and there is a specific area of your yard that works best for building your play area.

Determine the best location for your play area, by looking from within the house. Find a room, perhaps the kitchen or family room, that you will be in most often while the children are outdoors. Choose an area that can be observed from a window within this room. This is a great time saver when you have to check on crying, complaints or the absence of noise coming from the play area.

The area chosen from your window should be large enough for a 6 to 8 foot "use zone" around your play structure (see diagram). The "use zone" is for the running, jumping, and chasing that naturally occur around a play structure. It should be free of shrubs, fencing, sidewalks and other objects children can trip on or fall against.

When buying or planning your play structure, pay close attention to any squeeze-thru size spaces or openings accessible to the children. If the opening is wide enough for the body to slide through but too narrow for the head, strangulation can occur. For this reason the Consumer Product Safety Commission recommends that accessible openings, such as the space between ladder rungs or safety barriers, be no less than seven inches wide. An easy way to test your play equipment for unsafe openings, is to see if you can pass a seven inch diameter ball through any opening accessible to a child. If the ball can pass unimpeded through the opening, entrapment of the head should not be a problem.

If you are building your equipment out of wood, the effects of weather and ground contact need to be considered. Redwood and cedar naturally resist insects and decay without the use of preservatives, but may, after a year or two, need to be stained to prevent silvering.

Old railroad ties, utility poles and lumber posts that have been treated with creosote or pentachlorophenol (penta) are often available and inexpensive. There is sometimes a temptation to use them in borders and other parts of the play area. According to the Environmental Protection Agency (EPA), there is evidence associating frequent exposure to creosote or pentachlorophenol with cancer and other health problems. The EPA recommends that frequent and prolonged skin contact with these treated woods be avoided. Creosote and pentachlorophenol should not be used in playground equipment unless they have been sealed with at least two applications of an appropriate sealant. Urethane, epoxy and shellac are acceptable sealers for creosote-treated wood. Urethane, shellac, latex epoxy enamel and varnish are acceptable sealers for pentachlorophenol-treated wood.

Most of the pressure treated woods found in lumber yards and home improvement centers have been treated with one of the inorganic arsenicals. They are sold under trade names such as Outdoor Wood and All-Weather Wood. This type of treated lumber is widely used in commercial playground equipment. According to the EPA, it does not pose a risk from frequent or prolonged skin contact and, therefore, does not require sealers for protection.

Fir and southern yellow pine are woods commonly treated with the inorganic arsenicals. They are generally considered better than other types of pine for play equipment because they provide the extra strength needed in high stress areas such as swing posts and beams. Southern yellow pine also seems to be less prone to silvering than other types of lumber.

Too many injuries occur each year from home-made swing hangers that have not been checked regularly for wear. Improved connections, such as those made from eye bolts and "S" hooks or eye bolts and rope, wear rapidly from the pendulum movement of the swing. Inexpensive swing hangers with bushings designed to absorb the friction and wear of the swing action are available but hard to find. If you are unable to locate a parts dealer in your area, a brochure featuring accessories, parts and plans for residential playsets can be obtained by writing to: Slide & Swings, 7900 Sunkist Boulevard, Minneapolis, Mn. 55446.

Safe backyard play areas take a little planning and a little more work, but the satisfaction of doing the job right and knowing your children are safe more than pays for the extra effort.

Summer Educational Programs K-12

Make this an educationally invigorating summer! Students can boost basic skills while learning on an individualized basis in a friendly atmosphere. As an alternative to summer school, students may attend 1-4 mornings, afternoons, or evenings per week. Students master skills effectively with a 2:1 student-teacher ratio and motivating instructional curriculum.

Call now to reserve class time.

- Complete Diagnostic Testing
- Reading Skills
  Phonics, Comprehension, Rate
- Study Skills
  Basic Organizational Skills
- Math (all levels)
- Writing/Spelling
- English Grammar
- SAT Prep (Starting in July)
- Learning disabilities Programs

For information on Current or Summer Programs, call Steve or Melissa Dizendt
851-8354 858-3180 948-6040

Learning Achievement Centers

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100) EPA APPROVAL TO DISCHARGE PENTACHLOROPHENOL

https://www.env.nm.gov/swqb/documents/swqbdocs/NPDES/Permits/Tribals/NM0030601-PojoaqueTowaWWTP.pdf

Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

NPDES Permit No. NM0030601

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

Towa Resort Wastewater Facility
Pueblo of Pojoaque
16 Viarial St.
Santa Fe, NM 87506

101) VERMONT GAS PENTA GROUNDWATER CONTAMINATION

Vermont Gas is required to follow the soil management plan when drilling in the VELCO right-of-way and study areas where the utility pole preservative **pentachlorophenol could cause groundwater contamination.**

102) VERMONT MANAGING TREATED WOOD WASTE

http://www.anr.state.vt.us/air/docs/woodwaste_fs.pdf

Environmental Fact Sheet

Department of Environmental Conservation
Waste Management Division
103 South Main Street
Waterbury, VT 05671-0404
http://www.anr.state.vt.us/dec/dec.htm

VTDEC Publication #WM-1001 July, 2003

Treated wood products such as telephone poles, railroad ties, and pressure treated lumber can **contain toxic constituents in sufficient concentrations to cause them to be regulated as hazardous waste** when discarded (i.e., when they first become "waste"). Because of this, the Waste Management Division frequently receives questions about how to best manage these materials. This fact sheet addresses the common questions: "Under what circumstances can treated wood be reused?" and "How should treated wood be disposed of?"

As a general rule, treated wood is easy to recognize. Wood that is treated with creosote or chlorophenolic formulations tends to be dark in color and has a "chemical" or "smoky" odor. Wood that is "pressure treated" with inorganic preservatives can usually be identified by a characteristic "greenish" color. Depending on the wood treatment method used, arsenic, chromium, cresols (constituents of creosote), or **chlorophenols (e.g., pentachlorophenol) can be present in concentrations high enough to exceed regulatory limits.**

103) ENVIRONMENTAL FACT SHEET NEW HAMPSHIRE

http://des.nh.gov/organization/commissioner/pip/factsheets/bb/documents/bb-19.pdf

ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WD-BB-19 2014

Pressure-Treated Wood
Can It Be Used in New Hampshire's Waters?

Concerns over health and environmental effects There is a great concern about the use of pressure -treated wood in New Hampshire waters. Historically, creosote, pentachlorophenol, and inorganic arsenicals have been the most common preservatives used to extend the life of wood by protecting it from damage by insects, fungi, water and weather. High concentrations of these wood preservatives have been determined to have the capability to cause birth defects, tumors or cancer. As a result, creosote has been banned from use for quite some time. Both inorganic arsenicals and pentachlorophenol are known to accumulate in the tissues of animals. Exposure of fish to wood treatment solutions can rapidly cause harmful effects and death to fish at concentrations below 0.1 ppm. Though there is no evidence that sufficient amounts of these pesticides leach enough from docks to cause aquatic toxicity, the potential nevertheless exists.

Alternatives Acceptable alternatives are available. Cedar and redwood are naturally resistant to decay, but are more difficult to get in this part of the country, however, other alternatives such as **metals, plastics and composite materials** are available. Wood - polymer composites, made of 100 percent recycled wood and plastic, are environmentally friendly and may outlast other dock products. Another solution would be to use stainless steel pipes for the part of the dock that has direct contact with the lake or pond.

104) DRINKING WATER

http://www.who.int/water_sanitation_health/dwq/chemicals/pentachlorophenol.pdf

Major uses PCP and other chlorophenols are used primarily for protecting wood from fungal growth. Their use is in decline, and they have been abandoned from most other applications, such as indoor disinfectant, leather and textile application, and herbicide uses. **In several countries, their use has been totally discontinued (e.g. Sweden, Germany, Finland) or practically abandoned as a result of severe restrictions (e.g.**

EPA-HQ-2018-000065-0001917

Denmark). However, PCP is still an important pesticide in some developing countries because of its low cost and broad spectrum. In some developed countries (e.g. France, USA), several thousand tonnes are produced annually (IARC, 1991; McConnell et al., 1991). Even in those countries where PCP use has been abandoned, PCP continues to be an important environmental contaminant, because it is imported via various materials treated with it.

105) EPA SUPERFUND - MOHAWK TANNERY, NASHUA, NH

http://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0101188

The former Mohawk Tannery facility (a.k.a. Granite State Leathers) is located on approximately 30 acres in Nashua, Hillsborough County, New Hampshire. The currently inactive facility produced tanned hides for leather between 1924 and 1984. The site was proposed to the National Priorities List (NPL) on the basis of past disposal practices which included the direct discharge of wastewater containing such hazardous substances as chromium, zinc, and phenol into the Nashua River and the disposal of sludge containing such hazardous substances as chromium, **pentachlorophenol,** phenol, and 2,4,6 -trichloropehenol into a number of unlined disposal areas at the site. Two of the largest disposal areas are located directly next to the Nashua River; with one of these areas within the 100-year flood plain. These disposal areas were not designed, constructed, operated, and maintained to prevent the washout of hazardous substances in the event of a flood. The confluence of the Nashua and the Merrimack Rivers is located approximately 3.5 miles downstream of the site. Both the Nashua River and the Merrimack River are fished extensively and wetlands are located along both rivers. Approximately 5,025 people receive drinking water from ground water wells within a 4 - mile radius of the Site. However, a majority of the people living near the site are being supplied with potable water through the local water district.

EPA-HQ-2018-000065-0001918

The Site is comprised by two contiguous, approximately 15 acre parcels of land: a developed "northern parcel" that was historically used for tannery and waste disposal operations, and a "southern parcel" th at is undeveloped and does not appear to have been used by the former tannery.

106) EFFECTS OF PENTACHLOROPHENOL EXPOSURE

http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(05)63924-4/fulltext

Sir

O'Malley's review (April 19, p 1161)1 of pesticide exposure and poisonings did not mention the acute and chronic effects of pentachlorophenol (PCP) caused by PCP -treated lumber. PCP -related disorders are a ca use of concern, even though the US Environmental Protection Agency imposed severe restrictions on such treatment of lumber. I have reviewed the records of five family members from Alabama, USA —the parents and three young children —who had been exposed to PC P-treated lumber for 14 months from the siding of their home (built in 1992) and the burning of PCP -treated logs in the fireplace. In addition to intense irritation of the eyes and respiratory tract, this family have had recurrent infections, neuropsychiatric symptoms, and abnormal findings on laboratory investigation (positive antinuclear antibodies, high titre of rheumatoid factor, decreased complement 4, and raised urinary porphyrins).

During the past 30 years, I have emphasised the hazards of commercial PCP and its contaminants in my writings2, 3, 4 and in testimony to the Environmental Protection Agency.5 The most serious complications involve aplastic anaemia, red -cell aplasia, thrombocytopenic purpura, several types of leukaemia, Hodgkin's disease, an d non-Hodgkin lymphoma. Other PCP -related disorders include cardiomyopathy, nerve injury, soft-tissue sarcomas, severe inflammation of the upper and lower respiratory systems, fetal damage, congenital deformities, and infertility secondary to sperm destruction.

The extensive contamination of water, food, and air by PCP is a threat, owing to its persistence as a result of biomagnification. Epidemiological studies in the USA have detected PCP in over 80% of the population. PCP continues to vaporise from treat ed wood even after several years. Neither oil nor water -based paints eliminate the volatilisation of PCP from pressure -treated wood. There is also substantial blooming of PCP: the vaporisation of crystalline PCP as dust particles further increases exposure . Moreover, large amounts of chlorinated dibenzo -p-dioxins and dibenzofurans are present in PCP, especially in products manufactured in the USA.

107) CALIFORNIA PROP 65

The commercially available complex mixture of pentachlorophenol and by -products of its sy nthesis is a restricted -use pesticide and registered as a heavy -duty wood preservative for utility poles, cross arms, pilings, fence posts, and construction. It is also used as a competitive inhibitor of sulfotransferase in the laboratory. The complex mixture was used in the past as a biocide in ropes, paints, adhesives, leather, canvas, insulation, and brick walls. Indoor uses were cancelled in 1984. Non -wood preservative uses were cancelled and restricted in 1987.

[a] Pentachlorophenol is currently listed a s known to the state to cause cancer under Proposition 65. This listing includes the byproducts of pentachlorophenol synthesis, which are found in varying amounts in pentachlorophenol and the sodium salt formulations.

[b]The commonly found by -products of pen tachlorophenol synthesis include polychlorinated phenols (trichlorophenols and tetrachlorophenols), hexachlorobenzene, polychlorinated dibenzofurans (hexachlorodibenzofurans, heptachlorodibenzofurans, and octachlorodibenzofuran), polychlorinated dibenzo -p-dioxins (hexachlorodibenzo-*p*-dioxins, heptachlorodibenzo -*p*-dioxins, and octachlorodibenzo -*p*-dioxin), whereas 2,3,7,8-tetrachlorodibenzo-*p*-dioxin is a less commonly found by -product. Among them, 2,4,6-trichlorophenol, hexachlorobenzene, hexachlorodibenzodio xin, polychlorinated dibenzo-*p*-dioxins, and polychlorinated dibenzofurans are listed as known to the state to cause cancer under Proposition 65.

http://www.oehha.ca.gov/prop65/CRNR_notices/admin_listing/intent_to_list/NOIL103015pentachlrophenol.html

http://oehha.ca.gov/prop65/CRNR_notices/pdf_zip/PTFCommentsPentachlrophenol102315.pdf

108) NATIONAL TOXICOLOGY PEER REVIEW MEETING - 2013

http://ntp.niehs.nih.gov/ntp/about_ntp/monopeerrvw/2013/december/presentations/5_ntppeerreviewpcp_508.pdf

'Pentachlorophenol and by -products of its synthesis' is known to be a human carcinogen based on sufficient evidence from studies in humans demonstrating a causal relationship between exposure to pentachlorophenol and non -Hodgkin lymphoma. This conclusion is supported by sufficient evidence in experimental animals, and supporting mechanistic evidence.

Significant number of persons living in the U.S. are exposed to pentachlorophenol and by-products of its synthesis

- Widespread exposure, both past and present
  - Current exposures are lower than in the past, but exposure to workers and to general public still occurs
  - Evidence of recent exposures in the general population
    - People and homes near wood treatment facilities; blood levels of pentachlorophenol exposure: dioxin fingerprint from people near wood treatment facilities
    - From environmental and biological samples taken from preschool children and from their homes and day care centers
    - Data from the National Health and Nutrition Examination Survey (NHANES)
    - Low levels of pentachlorophenol have been found in foods, water, air, dust, and soil
    - Toxics Release Inventory (2011): 96,000 lbs from 30 U.S. facilities
  - Exposure to general population is primarily by inhalation and ingestion

https://ntp.niehs.nih.gov/ntp/roc/content/profiles/pentachlorophenol.pdf

Although the use of pentachlorophenol has been restricted since 1984, **there is evidence tha t people in the United States continue to be exposed to pentachlorophenol and by -products of its synthesis in the environment** . This evidence includes (1) elevated levels of chlorinated dioxins in the blood of people living near wood-treatment facilities an d in the soil at their homes (Dahlgren et al. 2007), **(2) detection of pentachlorophenol in the urine of preschool children and in samples of indoor and outdoor air and dust from their homes and daycare centers** (Wilson et al. 2003, 2007), and (3) detection of pentachlorophenol in the urine of U.S. residents in the Na ….Although environmental and urinary pentachlorophenol levels in recent studies are **consistent with continuing exposure of many individuals in the United States,** the levels are generally lower than three or four decades ago

https://ntp.niehs.nih.gov/pubhealth/roc/listings/p/pentachlorophenol/summary/index.html

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View in Article | CrossRef

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View in Article | PubMed

Roberts HJ. Testimony for FIFRA's scientific advisory panel. Forty-Second Meeting, Arlington, Virginia, June 17, 1981.

109) INTERNATIONAL CANCER AGENCY'S LATEST REPORT :

INTERNATIONAL CANCER AGENCY'S LATEST REPORT RAISES CONCERNS:

http://www.agri-pulse.com/International-cancer-agencys-latest-report-raises-CropLifes-ire-10252016.asp#.WBCnT8a_Jvo.twitter

WASHINGTON, Oct. 25, 2016 - The International Agency for Research on Cancer's latest report, which looks at the cancer -causing potential of five chemicals, received swift criticism from the group that represents U.S. pesticide manufacturers.

IARC published a summary in The Lancet yesterday of its review of pentachlorophenol (PCP), 2,4,6-trichlorophenol (TCP), aldrin, dieldrin, and 3,3′,4,4′-tetrachloroazobenzene (TCAB). The first four have been used as pesticides, but are no longer registered by EPA. TCAB "is formed during the production and degradation of chloroanilide herbicides," the Lancet news item said.

IARC categorized dieldrin, aldrin and TCAB as "probably carcinogenic to humans" (Group 2A in its classification framework); pentachlorophenol as "carcinogenic to humans" (Group 1), and TCP as "possibly carcinogenic to humans" (Group 2B).

But CropLife America, a frequent critic of the World Health Organization agency, raised questions about the report shortly after it appeared. CLA's Janet Collins, senior vice president of science and regulatory affairs, said IARC had failed to put its findings in the proper perspective.

"When communicating with the general public about any potential health concerns in its environment, it is important that organizations characterize hazard with perspective regarding actual exposure and real human health risk, which IARC's communication in Lancet fails to do," Collins said in a statement posted on CLA's website.

In an interview today, Collins elaborated on that position, but also questioned why IARC even evaluated the chemicals in the first place. All use s of aldrin and dieldrin in the United States, for example, have been banned since 1987.

"It begs the question: Why is IARC wasting time and resources and writing a press release?" Collins asked. "Our question continues to be: Why are we doing this?"

Pentachlorophenol "has been widely used as a wood preservative and insecticide, but its production and use are now restricted," IARC said in The Lancet. "General population exposure can occur from treated wood products, contaminated food and water, and incinerator emissions."

CropLife has been particularly outspoken in its criticism of IARC since March 2015, when the agency released a monograph - the official record of its working groups' deliberations - concluding that glyphosate, the active ingredient in Roundup, is probably a human carcinogen. A spokeswoman for CLA said Collins wants to be clear that CLA's concerns are about IARC's monograph program, not about IARC itself.

The IARC report triggered a wave of regulatory reviews around the world, most of which f ound it was unlikely to cause cancer in humans. An EPA Scientific Advisory Panel (SAP) was originally supposed to meet last week to review an agency paper that found glyphosate is not likely to be carcinogenic, but one of the panel members withdrew, and no w EPA hopes to reschedule the meeting for December.

Attempts to reach IARC for comment on Tuesday were not successful.

In another development concerning IARC and glyphosate, House Science Committee Chairman Lamar Smith, R -Texas, told EPA Administrator Gina McCarthy he "is concerned that the EPA will not evaluate glyphosate based on sound science."

In a letter, Smith cited documents the committee obtained that appear to contradict McCarthy's testimony to the committee about the extent of EPA involvement in the IARC glyphosate review.

"From documents it has obtained, the committee has determined unequivocally" that two EPA employees, Peter P. Egeghy in the Office of Research and Development (ORD), and Matthew T. Martin of ORD's National Center for Computational Toxicology, "played a much larger role in the IARC's assessment of glyphosate than you or any EPA official has previously admitted to the committee," Smith said.

He asked McCarthy to make those two employees, as well as Jim Jones, assistant administrator for the Office of Chemical Safety and Pollution Prevention, available for interviews no later than 5 p.m. on Nov. 1.

Smith also raised questions about the inclusion on the glyphosate SAP of Kenneth Portier, an American Cancer Society statistician and the brother of toxicologist Christopher Portier, who participated in IARC's glyphosate report.

Did you know Agri -Pulse subscribers get our Daily Harvest email and Daybreak audio Monday through Friday mornings, a 16 -page newsletter on Wednesdays, and access to premium content on our ag and rural policy website? Sign up for your four-week free trial Agri-Pulse subscription.

Christopher Portier contacted Jones after EPA's initial Cancer Assessment Review Committee (CARC) report on glyphosate was accidentally poste d online in May. That report, which was online for a few days before being removed, concluded glyphosate was not likely to be a human carcinogen.

On May 4, 2016, Portier forwarded Jones a Politico article reporting on the posting of the CARC study "and the implications it may have for a European

Union decision on glyphosate," Smith said in his letter. "Understanding Portier's urgency in the matter, … Jones forwarded Portier's email on to his EPA subordinates stating, 'We need to think about a statement that goes beyond saying our assessment is not final. Looks like it will be used to inform other government decisions.'

"Given Portier's apparent efforts to use IARC to influence global policy decisions and his desire to discredit the (European Food Safety Authority) glyphosate study, it is reasonable to assume that Assistant Administrator Jones acted to assist him and IARC by publically (sic) downplaying scientific analysis conducted by EPA," Smith said.

Also on Tuesday, Reuters reported that IARC officials were discouraging members of its glyphosate panel from releasing documents related to the glyphosate review.

IARC "does not encourage participants to retain working drafts or documents after the monograph has been published," according to an email from IARC's Kate Guyton to six members of the glyphosate panel, Reuters reported.

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In October, 2016, 18 scientists from eight countries met at the International Agency for Research on Cancer (IARC; Lyon, France) to finalise their critical review and evaluation of the carcinogenicity of pentachlorophenol (PCP), 2,4,6-trichlorophenol (TCP), aldrin, dieldrin, and 3,3′,4,4′-tetrachloroazobenzene (TCAB) following the procedures outlined in the IARC Monographs Preamble. **These assessments will be published as volume 117 of the IARC Monographs.**[1]

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The insecticide PCP, classified as a persistent organic pollutant under the Stockholm Convention, was evaluated as "carcinogenic to humans" (Group 1). PCP has been widely used as a wood preservative and insecticide, but its production and use are now restricted. General population exposure can occur from treated wood products, contaminated food and water, and incinerator emissions. **Epidemiological data provided sufficient evidence in humans for the carcinogenicity of PCP. In all of the available epidemiological studies, exposure to PCP was associated with an increased risk of non-Hodgkin lymphoma.** Results from a large cohort study [2] of Canadian sawmill workers showed a significant increase in the incidence of non-Hodgkin lymphoma with cumulative exposure to PCP. **Significantly increased risk of non-Hodgkin lymphoma was also reported for a cohort of US pesticide manufacturing workers exposed to PCP,** [3] **and results from two smaller studies**[4, 5] **including pesticide manufacturing workers showed positive associations between exposure to PCP and non-Hodgkin lymphoma. Positive associations with non-Hodgkin lymphoma were also seen in three case-control studies in Sweden and New Zealand. Risk of multiple myeloma, now classified as a subtype of non-Hodgkin lymphoma, was also increased in several studies. The pattern of excess cancers differed from that observed in populations that are highly exposed to dioxins, which are possible impurities of PCP. Additionally, there was sufficient evidence of carcinogenicity in experimental animals, with a pattern of tumours that was similar across three test agents of different purity (90·4%, 91%, or ≥98% PCP). Similarly, test agents varying in purity induced mechanistic effects that are different from those exhibited by dioxins. These mechanistic studies provided strong evidence of multiple key characteristics of human carcinogens,** [6] **indicating that PCP is metabolically activated to electrophilic benzoquinones and redox-cycling semiquinones, induces oxidative stress, is genotoxic, is anti-estrogenic, and alters cell signalling, apoptosis, and proliferation.**

TCP has also been used as a wood preservative, insecticide, and in the synthesis of some fungicides. The epidemiological data on TCP carcinogenicity were inadequate. There was sufficient evidence in experimental animals for the carcinogenicity of TCP, as induction of hepatocellular tumours in male and female mice, and monocytic leukaemia in male rats, has been reported. [7] Few mechanistic data or other relevant data were available. TCP was evaluated as "possibly carcinogenic to humans" (Group 2B).

Aldrin and dieldrin are synthetic organochlorine pesticides classified as persistent organic pollutants under the Stockholm Convention. Their use in several countries has been banned or severely restricted since the early 1970s, and general population exposures have declined. There was sufficient evidence in experimental animals for the carcinogenicity of aldrin, with three studies[8, 9, 10] reporting the induction of hepatocellular carcinomas. Epidemiological data on aldrin were inadequate and mechanistic data were sparse. However, since aldrin rapidly converts to dieldrin in the body, exposure to aldrin inevitably entails internal exposure to dieldrin. Dieldin is slowly excreted in humans because of inefficient metabolism and sequestration in fat. For dieldrin, a prospective study in Denmark found a **significant increase in the risk of breast cancer with increasing serum dieldrin levels**.[11] A similar study in Norway did not find an association, but had fewer exposed cases. **Positive associations with breast cancer were also reported in wives of men who had used dieldrin in the US Agricultural Health Study[12] and in women with the highest level of serum dieldrin in a case-control study in Long Island (NY, USA).**[13]

https://www.ncbi.nlm.nih.gov/pubmed/12163320?dopt=Abstract

http://cebp.aacrjournals.org/content/11/8/686.long

There was limited evidence in humans on dieldrin for breast cancer, and inadequate evidence for non-Hodgkin lymphoma and other cancers. There was sufficient evidence in experimental animals for the carcinogenicity of dieldrin, as hepatocellular carcinoma was observed in male and female mice in most of the 15 available studies.[8, 9, 10] Mechanistic studies provided moderate evidence for multiple key characteristics of carcinogens. Dieldrin, and aldrin metabolised to dieldrin, was evaluated as “probably carcinogenic to humans” (Group 2A).

TCAB is not manufactured commercially but is formed during the production and degradation of chloroanilide herbicides such as propanil, linuron, and diuron. TCAB was detected in propanil formulations (up to 2600 µg/g)[14] and in soil 2 years after propanil application. No exposure measurements were available, but exposure to TCAB can occur in herbicide manufacturing or application, from residues on food, or via proximity to aniline herbicide applications. No epidemiological studies of the carcinogenicity of TCAB were identified. Chloracne, a response pathognomonic for aryl hydrocarbon receptor (AhR) activation, was reported in four case series of workers exposed to TCAB and other chemicals during dichloroaniline herbicide production. TCAB bears structural

resemblance to dioxins and is highly lipophilic, but is rapidly metabolised, with extensive azo reduction in the gut and liver to give 3,4 -dichloroaniline metabolites that are readily eliminated. In mice and rats, the incide nce of multiple tumour types was increased, providing sufficient evidence in experimental animals for the carcinogenicity of TCAB. Lung tumours occurred in mice and rats. In mice, TCAB also caused cancers of the urethra and forestomach, fibrosarcomas and m alignant schwannomas of the skin, and lymphomas. In rats, TCAB also induced malignant schwannoma, and cancers of the biliary system and oral mucosa. [15] This spectrum of rodent tumours encompasses those observed with other AhR agonists previously evaluated as Group 1 carcinogens (eg, dioxins, dioxin -like polychlorinated biphenyls, and 2,3,4,7,8 -pentachlorodibenzofuran). Additionally, TCAB induces multiple non -neoplastic effects in rodents, rabbits, chicken, and zebrafish th at are consistent with, or are hallmarks of, AhR activation. Specifically, in mice and rabbits, TCAB causes chloracne, and in chronically exposed rodents, TCAB induces CYP1A1 and CYP1A2, wasting syndrome, thymic atrophy, as well as hyperplasia and chronic inflammation in multiple tissues. [15]TCAB activates AhR in rats, mice, and chicken embryos; in vitro, TCAB binds to mouse AhR, and activates rat and rainbow trout AhR. [15, 16, 17, 18] These mechanistic data provided strong evidence that TCAB modulates receptor -mediated effects, induces chronic inflammation, and alters cell proliferation. TCAB was classified as “probably carcinogenic to humans” (Group 2A) because it belongs, on the basis of mechanistic considerations, to a class of agents that activate AhR, and some members of this class have previously been evaluated as Group 1 or Group 2A carcinogens.

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http://link.springer.com/article/10.1007%2Fs10552-006-0007-9

Cancer and Occupational Exposure to Pentachlorophenol and Tetrachlorophenol

Objective

The objective of this study is to assess the carcinogenicity of pentachlorophenol and tetrachlorophenol using data from the BC sawmill workers cohort study.

Methods

The cohort consisted of 27,464 men employed by 14 sawmills for **1 year** or more between 1950 and 1995. Fatal (1950 –1995) and incident (1969 –1995) cancers were identified using national registries. Plant records and systematic interviews with senior

employees were used to estimate dermal exposure. Comparisons were made with the general BC population and dose -response relationships were assessed using Poisson regression.

Results

There were 1,495 fatal cancer and 2,571 incident cancers . There were no large o r statistically significant excesses of any of the specific cancers were observed compared to the general population. Internal analyses showed strong dose -response relationships for non-Hodgkin's lymphoma, multiple myeloma, and kidney cancer. These relationships were strongest when exposure was restricted to pentachlorophenol. The strength of the dose-response increased when exposure was lagged by 20 years.

Conclusions

Dermal exposure to pentachlorophenol was associated with non-Hodgkin's lymphoma, multiple myeloma, and kidney cancer, but not with other cancers of a priori interest.

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http://www.sciencedirect.com/science/article/pii/S0045653511002281

Mortality of US pentachlorophenol production workers through 2005

Abstract

A cohort of 2122 US pentachlorophenol (PCP) production workers from four plants in the National Insti tute for Occupational Safety and Health Dioxin Registry was exposed to PCP and to polychlorinated dibenzo -p-dioxin and dibenzofuran contaminants of PCP production. A subcohort of 720 was also exposed to 2,3,7,8 -tetrachlorodibenzodioxin, a contaminant of tr ichlorophenol (TCP) while using TCP or a TCP derivative. PCP and several production contaminants have been implicated as animal carcinogens. A priori hypotheses were that the cohort would have elevated standardized mortality ratios (SMRs) for aplastic anem ia, soft -tissue sarcoma, and non -Hodgkin lymphoma, as suggested by human studies, and for leukemia and liver, adrenal, thyroid, and parathyroid cancer, as suggested by animal studies. From 1940 to 2005 1165 deaths occurred with an overall SMR of 1.01 [95% confidence limits (CI), 0.95 –1.07]. Overall cancer mortality (326 deaths, SMR 1.17, CI 1.05 –1.31) was in statistically significant excess. There were excess deaths for trachea, bronchus and lung cancers (126 deaths, SMR 1.36, CI 1.13 –1.62), non -Hodgkin lym phoma (17 deaths, SMR 1.77, CI 1.03 – 2.84), chronic obstructive pulmonary disease (63 deaths, SMR 1.38, CI 1.06 –1.77), and medical complications (5 deaths, SMR 3.52, CI 1.14 –8.22). In race - and sex -specific analyses, **white males had increased non-Hodgkin lymphoma mortality (17 deaths,**

SMR 1.98, CI 1.15 –3.17) and males of other races had increased leukemia mortality (four deaths, SMR 4.57, CI 1.25 –11.7). The excess of cancers of a priori interest, non -Hodgkin lymphoma and leukemia, provide some support for th e carcinogenicity of PCP, however, further studies with more detailed exposure assessment are needed.

Highlights

► All 2122 former US pentachlorophenol (PCP) production workers were studied. ► Evidence suggests that PCP and some production contaminants are animal carcinogens. ► A mortality analysis compared PCP workers to the US population. ► **Overall cancer mortality was in statistically significant excess. ► Lung cancer and non-Hodgkin lymphoma mortality were significantly increased**.

110) EPA SETTLES WITH WESTROCK CP FOR $4.6 MILLION

https://www.epa.gov/newsreleases/epa-settles-westrock-cp-46-million-reimburse-cleanup-costs-former-wood-treating-plant

For Immediate Release: November 3, 2016

EPA settles with WestRock CP for $4.6 million to reimburse cleanup costs at former wood treating plant

SAN FRANCISCO – The U.S. Environmental Protection Agency has settled with WestRock CP, LL C, which will pay $1.6 million in cash plus shares of stock valued at nearly $3 million as partial reimbursement for a hazardous waste cleanup near Prescott, Ariz.

The site is a former wood treating plant located on the **Yavapai-Prescott Indian Tribe** reservation, and cleaned up by the EPA using its authority under the Comprehensive Environmental Response, Compensation and Liability Act (the Superfund law). In 2012, EPA discovered significant amounts of arsenic and pentachlorophenol-contaminated material at the abandoned site. The Agency spent $6.1 million removing 4,209 tons of contaminated soil during a two-month long cleanup.

"This unique settlement was structured to allow the Agency to receive corporate shares instead of a full cash payment," said Enriq ue Manzanilla, Director of the Superfund Program for the EPA's Pacific Southwest Office. "We are pleased to recover the majority of the taxpayer -provided funds spent on the environmental cleanup on tribal lands."

The shares of stock being transferred to the Agency include 56,064 shares in WestRock CP, LLC's parent company, WestRock Company, and 9,344 shares of a newly established spin-off company, Ingevity Corporation. The EPA will sell the stock once the

settlement is finalized in federal District Court. The combined stock current value is $2,998,406.

Southwest Forest Industries Inc. operated the wood treating plant from 1961 -1985, and a successor company, Smurit -Stone Container Enterprises, Inc. went bankrupt, leaving the cleanup obligations with the cur rent corporate successor, Westrock, CP LLC, a manufacturer of paperboard and paper-based packaging.

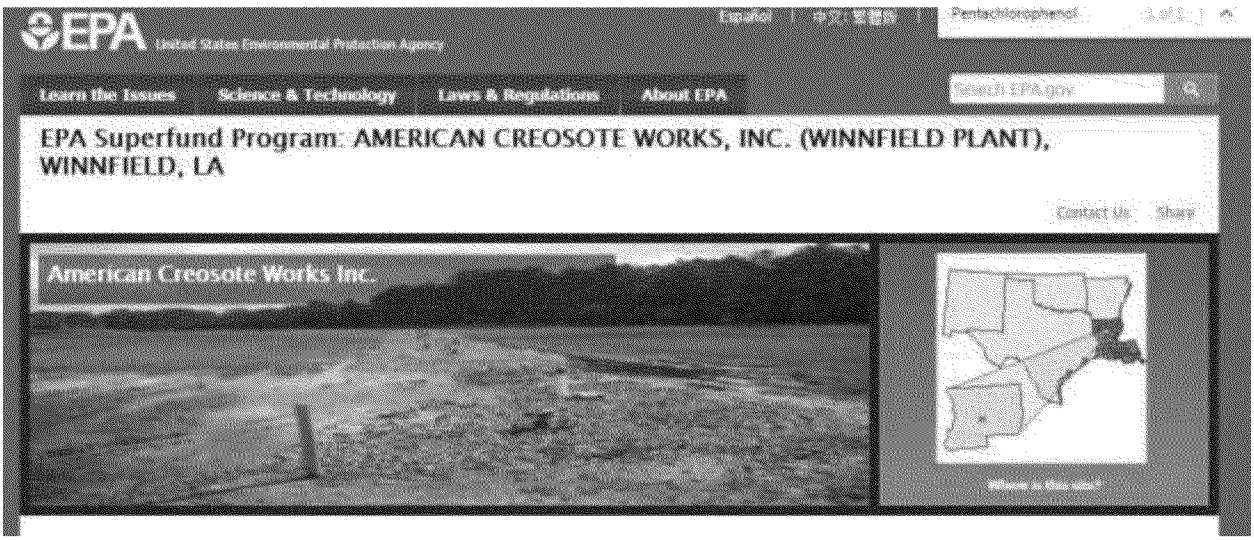
Pentachlorophenol, an industrial wood preservative, is extremely toxic and can cause neurological, blood, and liver effects, and eye irritation in the short term and long term impacts on the respiratory tract, blood, kidney, liver, immune system, eyes, nose, and skin. Arsenic, used to formulate a common wood preservative, can cause gastrointestinal effects, anemia, peripheral neuropathy, skin lesions, hyperpigmentation, and liver or kidney damage in humans.

The consent decree is subject to a 30 -day public comment period. To view the consent decree or to submit comments, please visit: https://www.justice.gov/enrd/consent - decree/us-v-westrock-cp-llc

Media Contact: Margot Perez-Sullivan, 415-947-4149, perezsullivan.margot@epa.gov

111) AMERICAN CREOSOTE WORKS INC.

https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0600317



Current Status

On September 19, 2016, EPA signed the Record of Decision (ROD) Amendment for the American Creosote Works Inc. site. The ROD Amendment identifies the revised remedy which changes the method to address the source contaminants prescribed in the original 1993 remedy. EPA will be initiating a Remedial Design which develops the plans necessary to implement the revised remedy.

Site Background

The 34 -acre American Creosote Works, Inc. (Winnfield Plant) site is located in Winnfield, Louisiana. Wood treatment took place on site from 1901 to 1979. The treatment process used creosote and pentachlorophenol (PCP). After the site owner, Dickerson Lumber Company, declared bankruptcy, Stallworth Timber Company purchased the property and wood treatment o perations resumed in 1981 only to abandon the site in 1985. Spills and treatment process upsets contaminated soil and ground water. Remediaion at the site has been on-going since 1994.

112) UTILITY POLE KENMORE WETLANDS

Utility poles installed in a Kenmore wetland. October - 2016

http://www.king5.com/mb/tech/science/environment/pse-installed-toxic-utility-poles-in-kenmore-wetland/346507066

WATCH THIS VIDEO ON THIS SITE

The Washington Department of Fish and Wildlife says Puget Sound Energy needs to fix toxic utility poles installed in a Kenmore wetland.

The poles are right next to Marilyn Knutson's home, where she keeps her horses in a fenced in pasture.

Knutson says she alerted WDFW about the new transmission line, which violates PSE's own permit. The wood is treated with a carcinogenic preservative called penta. It's not allowed in wetlands like the one around Swamp Creek.

"I worry ab out them rubbing up against the poles, getting it on their fur. They lick themselves," she said.

Knutson has lived near the wetland for 50 years. She is heartbroken about the latest challenge to her efforts to protect it.

"This wetland can make me cry," sh e said. "I do love my wetland. I love everything about it."

PSE claims the pole installation was a mistake, saying crews didn't realize they were crossing a wetland.

KING 5 received the following statement from PSE:

"We recently rebuilt our Moorlands -Vitulli transmission line that serves the Bothell and Kenmore neighborhoods. It's part of our continuing efforts to provide safe, reliable power to the area. During that work, we identified that poles treated with penta (pentachlorophenol) were placed in the wetlands in that corridor. The bases of the poles are in casings in the soil which provide stability and a barrier between the groundwater and the pole. However, since the casings end at top of the soil line, we immediately began working on solutions to exte nd the water barrier up the poles. That remediation work is underway with a variety of options being discussed."

Knutson doesn't believe PSE knew about the issue until her requests for information prompted action from WDFW. According to PSE, officials real ized the error soon after installation.

In a letter sent from WDFW to PSE, Assistant Regional Habitat Program Manager Stewart Reinbold writes that he wants a response from PSE by November 4:

"Also as I have stated in my communications with Mr. Padvorac if PSE had asked to use Penta treated piles WDFW would have tried to work out an encapsulation situation. This would have included installation of a steel potentially plastic pile around the treated wood with a sealed concrete bottom and the surrounding pilin g extending up the Penta pile to above the 100 yr flood elevation. However at this point the Penta treated piles were not permitted and do not encapsulate the treated piles. Further the voicemail response from Mr. Padvorac stating the 5/8 crush rock surrou nd part of the pile will stop any leaching is not correct."

Bill Lider and the Sno -KING watershed council want the poles removed. The chemical they're leeching can hurt salmon and other wildlife, then move up the food chain to humans.

"They obviously weren't paying attention to the requirements of their permit which told them not to use penta. Whether it was intentional or accidental is irrelevant," Lider said.

PSE says the new line provides safe and reliable power, and they'll find a w ay to provide a safe habitat for wildlife as well.

In the letter, Reinbold gives PSE until Friday to actively work with WDFW toward a resolution or else enforcement action could follow. However, Region 4 Habitat Program Manager Brendan Brokes tells KING 5:

"The Department of Fish and Wildlife is committed to working with PSE, as with all of our customers, to protect fish life and help them come into compliance with their Hydraulic Project Approval. We have long history of working PSE and this incident is an anomaly. We feel confident that PSE we will be able to work with them to resolve the concern. I'm still seeking information regarding this specific situation, but involving our enforcement division is typically reserved for the most egregious violations. At this point we have no reason to believe we will need their assistance."

PSE may have to wait until after salmon spawning season and winter to deal with the poles.

113) PENTACHLOROPHENOL COMPANY UNABLE TO PAY

http://www.dep.state.fl.us/waste/quick_topics/publications/wc/sites/summary/107.pdf

Post & Lumber Preserving Company
State Road 12 & Post Plant Road
Quincy, Florida
County: Gadsden
District: Northwest
Site Lead: Waste Cleanup Program
Approved for Cleanup: July 29, 1996
HWC # 107

Site Description and History

The Post & Lumber Preserving Company, Inc. is located at the northeast corner of State Road (SR) 12 and Post Plant Road, approximately 3.5 miles east of Quincy, Gadsden County, Florida in Township 02N, Range 03W, Section 11 at 30° 35′ 34.7700″ N, 84° 30′ 38.3800″ W. The area is rural res idential with some light industry. The northeast and eastern portions of the site are bordered by undeveloped land covered by thick brush and trees. The former family -owned wood treating facility comprises approximately 18 acres including an office/storage building, the former wood treating area, and pole barn storage shed. The facility produced pressure treated posts and lumber using both Wolmanizing salts (copper, chromium & arsenic [CCA]) and pentachlorophenol (PCP), beginning in 1948. The CCA treatment consisted of a 1% solution of Wolman salts (fluoride, hexavalent chromium [Cr+6], arsenic, dimethyl phenol and copper). The PCP wood preservative consisted of a 5 – 7% solution of PCP

EPA-HQ-2018-000065-0001934

mixed with diesel fuel and/or water. Both PCP and CCA onsite waste dispo sal activities are documented. Waste sludge from the PCP and CCA wastewater sumps was placed into an onsite sludge pit (8 ft × 30 ft × 4 ft deep). Sludge, process wastewater, and surface water runoff from the site were also directed to a former onsite surf ace impoundment.

The facility is currently inactive and no longer conducts any wood treating operations. The former process area is littered with demolition debris from the razing of the plant. Black and green stained soil is evident surrounding the former treatment area. Several wooden structures remain onsite.

Two corrective actions were completed onsite prior to adoption for State funded cleanup. A reported 12 to 15 thousand cubic yards of contaminated soils and sludges from the original surface impoundm ent were addressed by the facility owner/operator through the RCRA closure permit, with the installation of an underlying clay liner and synthetic cover to contain the consolidated materials. In May 1996, the EPA Emergency Response and Removal Branch completed excavation and treatment of additional onsite soils, which exceeded EPA's emergency soil removal criteria. Excavated soils were treated onsite by solidification/ stabilization. Treated soils included those in the former process and dumping pit areas where excavation reached 6 to 8 feet below land surface and elsewhere onsite where soils were excavated to 2 feet below land surface.

Threat

Groundwater contamination in the surficial aquifer by PCP and arsenic has been confirmed. Area residents obtain pota ble water from the underlying Floridan Aquifer. A deep potable supply well is located at the southeast corner of the former process area. Periodic sampling of the deeper onsite potable supply well by DEP and offsite area private wells by the Florida Depart ment of Health (DOH, formerly HRS) continues to indicate that the underlying Floridan Aquifer has not been

affected but the potential for contamination remains a concern. Dioxin, arsenic and PCP are present in o nsite soils at concentrations above soil cleanup target levels for leachability to groundwater and direct contact based on both commercial and residential land use. DEP warning signs have been placed on the fence surrounding the former facility property, indicating the presence of contaminated soil and water.

To date, DEP has focused its soil cleanup efforts primarily on removal of contaminated soils from offsite properties where arsenic and dioxin have been confirmed at concentrations above residential soi l cleanup target levels and the potential for exposure exists.

Response Strategy and Status (July 2016)

The site was approved for State funded cleanup in July 1996 after the DEP District office and the Office of General Counsel determined that the site own er was unable to perform site cleanup. Additional contamination assessment work was performed by DEP from July 1997 to January 1998 to determine the extent of groundwater and soil contamination exceeding allowable concentrations that are protective of curr ent and future land use. Assessment included the installation and sampling of 7 new and three existing surficial aquifer monitoring wells, the collection of 209 soil samples both onsite and offsite, and sediment and surface water sampling.

The Contaminatio n Assessment Report (CAR) was approved in June 1998. Data collected during the assessment indicates that arsenic contamination in soils above levels acceptable for residential land use is widespread onsite. PCP contamination in soils above residential clea nup goals is also present, but more localized onsite. Dioxin was observed in 7 out of 10 onsite soil samples at levels slightly above the Department's recommended allowable concentration of 7 ppt under a future residential land use scenario.

Both PCP and arsenic were detected in onsite groundwater in the surficial aquifer above State drinking water standards. Private well sampling by the Department of Health in 1997 did not detect site related contaminants in private wells on properties located immediately south of the site. No Floridan Aquifer contamination exceeding Drinking Water standards was observed.

The installation of additional monitoring wells and soil sampling was completed and a CAR Addendum was submitted in November 1998. The Addendum results confirmed the presence of soils and sediments immediately south of SR 12 containing arsenic and PCP above soil cleanup target levels for unrestricted residential use. Surficial aquifer contamination was not observed to extend offsite to the south or east. A Remedial Alternatives Evaluation Report (RAE) was submitted in October 1998. Treatability testing of potential technologies, including chemical oxidation and phyto -remediation technologies, was completed in June 2001. A Revised RAE Report was received in March 2002 that incorporated an evaluation of the treatability testing results and additional remedial alternatives which might be used to cleanup both the on- and offsite soil contamination and groundwater contamination.

The RAE estimated that 47,000 cubic yards of soils were present onsite with contaminant levels above that acceptable for unrestricted land use. The projected cost of soil cleanup determined in

the RAE ranged from $1.5 million to $13.88 million, depending upon the selected technology and land use scenario. Remediation of contaminated groundwater to State drinking water standards was projected to cost $2 million.

An Interim Remedial Measure (IRM) was selected by DEP in September 1999 to address the offsite soil and sediment contamination located south of SR 12. The selected IRM consisted of excavation of the offsite soils contaminated with arsenic and/or dioxin above DEP soil cleanup target levels (SCTL) for residential use, with offsite disposal at a permitted landfill. Additional offsite soil sampling and removal of contaminated soils south of SR 12 was conducted in phases, with approximately 54,221 tons of contaminated soils removed as of December 2006 (Phases I-IV).

Concurrently with the offsite removal activities, DEP conducted onsite and offsite soil and groundwater sampling including installation of additional monitoring wells north of SR 12. This data was necessary in order to support selecti on of a final onsite remedy and determine the need for offsite removal actions north of SR 12. The resulting data confirmed the presence of arsenic and dioxin soil contamination on properties north, east and west of the site. Groundwater contamination prim arily by arsenic and pentachlorophenol was confirmed in the shallow aquifer onsite and to a limited degree offsite to the north, east, and southeast. Notices of "offsite contamination" to all affected property owners for both soil and groundwater were completed by DEP in 2005 and amended in 2006. Additional offsite monitoring wells were installed in October, 2010 and sampled along with the existing monitoring wells. A Groundwater Monitoring Report was submitted to DEP in November 2010. Groundwater monitorin g is ongoing to ensure that existing groundwater contamination is not migrating.

In April 2007, DEP initiated soil removal activities on several properties west of the site and Post Plant Road. Approximately 10,112 tons of contaminated soils were excavated from offsite properties northwest of SR 12 (Phases V and VI) with transport and disposal at an offsite permitted disposal facility in 2007/2008.

Phase VII removal activities were initiated in March 2009 to address approximately 11,700 tons of contaminated soils located on offsite adjacent properties northwest and immediately east of the former Post and Lumber facility property. Removal activities were discontinued May 1, 2009 due to frequent rains and flooding resulting in poor field conditions and signifi cant impacts to the excavation schedule. Properties where excavation and backfill had been completed were restored with sod and/or seed. DEP remobilized in October and completed removal and restoration activities for the three properties northwest of the P ost & Lumber site in late November 2009. DEP and its contractor mobilized in June 2010 and completed the remaining Phase VII removal and restoration activities on the two properties located immediately east of the site in October 2010.

In July 2011, DEP an d its contractor installed a system of low earthen berms and erosion control matting as an onsite interim action to control surface runoff and prevent

erosion and transport of onsite contaminated soils into the wetland and creek located on the eastern end of the former facility property.

Post & Lumber Preserving Company

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In March 2012, the DEP contractor mobilized to the site to complete a second onsite interim action. Trees and other vegetation were cleared from the surface of the former onsite RCRA closure unit and a thick synthetic cover was installed on top of the stockpile to secure the underling contaminated soils. Replacement of the original cover will prevent percolation of rainwater into the stockpile resulting in leaching of contaminants from that area into the groundwater.

Annual 2013 groundwater monitoring results along with onsite petroleum assessment results were provided in reports to DEP in October 2013. The 2013 monitoring results confirmed that groundwater contamination in the sur ficial aquifer, consisting of arsenic, pentachlorophenol (PCP) and PCP daughter products, remains primarily on the former facility property with limited offsite migration. The presence of PCP daughter products suggests that PCP degradation is occurring at the site. The annual event also included installation and sampling of temporary monitoring wells for petroleum constituents along with soil borings to determine if petroleum sources are present in former tank areas. Petroleum related compounds including be nzene, MTBE and TRPH were identified above GCTLs in one or more temporary monitoring wells installed onsite. One or more soil samples contained petroleum constituents above default leachability criteria. Additional petroleum source delineation was recommen ded by the contractor. Additional permanent monitoring wells were installed as part of the subsequent annual site groundwater monitoring event as documented in the March 31, 2015 Annual Groundwater Monitoring Report.

Additional soil sampling was conducted in 2011 on the former facility property to further characterize site-related contamination and support selection of the final onsite remedy. The resulting onsite data confirmed concentrations of arsenic and dioxin, over the majority of the site, at levels significantly above commercial cleanup target levels. Further onsite and offsite sampling was completed in June 2013 to supplement existing data and included sediment sampling in wetlands located both onsite and immediately north of the former facility pro perty. Results were provided in a draft Data Summary Report submitted to DEP in November 2013.

A draft Cost Estimate of Presumptive Remedial Options report was provided to DEP by the contractor in March 2014. A revised draft report was submitted in Decembe r 2014. In the report, potential onsite remedial technologies are evaluated and remedial cost estimates developed to support DEP selection of an onsite soil and wetland sediment remedy. An estimated 77,000 cubic yards of contaminated soils and sediments on the former Post & Lumber facility property contain contaminants above DEP commercial soil

cleanup target levels and sediment quality guidelines. The final March 10, 2015 summary table of Presumptive Remedial Options Cost Estimates was provided to DEP which identified 6 onsite remedial options with supporting design assumptions, and cost estimates for each remedial alternative to address onsite soil and sediment contamination. The summary table also provided cost estimates to address the remaining soil and sediment contamination on offsite properties based on excavation of an estimated 19,000 cubic yards.

Schedule

To date, approximately 74,000 tons of contaminated soils have been removed from surrounding offsite residential properties. Offsite sampling is co nducted using a phased approach to support

Post & Lumber Preserving Company

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design and implementation of soil and sediment removal activities where DEP cleanup target levels are exceeded.

Site data indicates that offsite contaminated soils and wetland areas still need to be addressed on several properties north, northeast and southwest of the Post & Lumber site as well as properties to the east of the site abutting the creek leading to Little River where contaminated sediment has been identified . The estimated volume of contaminated soils and sediment remaining to be addressed is 96,000 cubic yards. DEP has reached out to the federal Environmental Protection Agency (EPA) for assistance in addressing the remaining onsite and offsite contamination.

Annual groundwater monitoring is ongoing.

114) LINKS – MORE LINKS ON WEB SITE:

http://www3.epa.gov/airtoxics/hlthef/pentachl.html

http://www.fs.fed.us/t-d/pubs/htmlpubs/htm06772809/page14.htm

http://www.dtic.mil/dtic/tr/fulltext/u2/a322630.pdf

http://www.wbrc.com/story/28944736/toxic-trouble-does-contamination-remain-in-the-soil-and-water

http://www3.epa.gov/airtoxics/hlthef/pentachl.html

http://nepis.epa.gov/Simple.html

https://www.facebook.com/PentaChloroPhenol

http://www.lawandenvironment.com/tag/pentachlorophenol/

http://lawdigitalcommons.bc.edu/cgi/viewcontent.cgi?article=2133&context=ealr

http://cdn.ca9.uscourts.gov/datastore/opinions/2013/04/03/11-16042.pdf

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http://chm.pops.int/Portals/0/download.aspx?d=UNEP-POPS-POPRC8WG-ASSES-PCP-draftRP-Supp-20130416.En.docx

http://vtdigger.org/2014/08/21/rare-cases-utility-poles-source-pcp-contamination-drinking-water/

http://blog.medfriendly.com/2013/02/is-your-drinking-water-contaminated-by.html

http://ohiowatersheds.osu.edu/node/1573

http://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2012.300910

http://www.alexanderinjury.com/library-toxic-11/

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http://archive.nationalaglawcenter.org/assets/cases/beyond.html

http://www.slate.com/blogs/the_eye/2013/10/30/utility_poles_should_we_send_them_underground.html

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http://www.dufferincounty.ca/files/uploads/2015-01-08_County_Council_minutes.pdf

http://www.deq.state.or.us/lq/ECSI/ecsidetailfull.asp?seqnbr=959

http://www.cob.org/cob/helog.nsf/HE/21D7C3A5F682F33788257E310063A0BC?OpenDocument

http://origin-www.upnorthlive.com/uploadedFiles/wpbn/News/Stories/2015-4-22%20Kids%20Kove%20Press%20Release.pdf

http://en.paperblog.com/rising-tide-vermont-addison-county-residents-stage-sit-in-at-public-service-board-demanding-a-halt-to-pipeline-construction-915848/

http://environment.netronline.com/site.php?cid=WAD008957243

http://www.whatcomwatch.org/php/WW_open.php?id=689

http://jama.jamanetwork.com/article.aspx?articleid=201292\

https://clu-in.org/download/contaminantfocus/dnapl/Treatment_Technologies/Visalia_pyrolysis_1998.pdf

http://www.nbcbayarea.com/investigations/Chemical-Leak-at-Livermore-Oil-Field-May-Have-Contaminated-Some-Alameda-County-Water-Supplies-353092171.html

http://www.eco-usa.net/superfund_sites/california_superfund_sites.shtml

http://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0902061

http://www.atsdr.cdc.gov/toxprofiles/tp51-c9.pdf